

The Musical Theory and Philosophy of Robert Fludd

THESIS

presented to the Faculty of Arts
of
the University of Zurich

for the Degree of Doctor of Philosophy

by

PETER J. AMMANN

of Burgdorf and Madiswil

Accepted by the Faculty of Arts
on the Recommendation of
Professor Kurt v. Fischer, Ph. D.

Juris-Verlag 1968



Digitized by the Internet Archive
in 2026

https://archive.org/details/IA41507221_0061

The Musical Theorie and Philosophie of Robert Fludd

THESIS

presented to the Faculty of Arts
of
the University of Zurich

for the Degree of Doctor of Philosophy

by

PETER J. AMMANN

of Burgdorf and Madiswil

Accepted by the Faculty of Arts
on the Recommendation of
Professor Kurt v. Fischer, Ph. D.

Juris-Verlag 1968

TEILDRUCK



Reprinted from the Journal of the Warburg and
Courtauld Institutes. Volume XXX, 1967.

CONTENTS

PART I

ROBERT FLUDD

Chapter I Tradition	1
Chapter II Life	6
Chapter III Writings	8
Chapter IV Philosophy	14

PART II

MUSIC IN FLUDD'S WRITINGS

Chapter I Introduction	21
Chapter II <i>Tractatus apologeticus</i>	22
Chapter III <i>Utriusque mundi... historia</i>	34
1. <i>De Musica mundana</i>	34
2. <i>De Templo Musicae</i>	43
3. <i>De integra Microcosmi harmonia</i>	47
Chapter IV The controversy with Kepler	56
1. Introduction	56
2. Kepler's <i>Harmonice mundi</i>	57
3. Kepler's opinion of Fludd in the appendix to <i>Harmonice mundi</i> ..	61
4. Fludd's first reply to Kepler: <i>Veritatis proscenium</i>	65
5. Fludd's second reply to Kepler: <i>Monochordum mundi</i>	71

Chapter V The controversy with Mersenne and Gassendi	89
1. Introduction	89
2. <i>Sophiae cum moria certamen</i>	90
3. Gassendi's <i>Examen Philosophiae Roberti Fluddi</i>	94
4. <i>Clavis Philosophiae et Alchymiae Fluddanae</i>	96
Chapter VI Summary	97

PART III

THE MUSICAL THEORY AND PHILOSOPHY OF ROBERT FLUDD

Chapter I Tradition	104
1. Marsilio Ficino	104
2. Agrippa	107
3. Francesco Giorgi	114
Chapter II Fludd's musical cosmos. The monochordum mundi as a symbol of his philosophy	123
Chapter III Fludd's controversy with Kepler and Mersenne: The 'Ent- musikalisierung der Welt' and the rise of science	134
Notes	146

BIBLIOGRAPHY

FLUDD'S WRITINGS

Apologia compendaria, Leyden 1616.

Tractatus apologeticus, Leyden 1617.

Tractatus theologo-philosophicus, Oppenheim 1617.

Utriusque cosmi . . . historia,

Vol. I, *De . . . Macrocosmi . . .*

Tract. I, *De Metaphysico Macrocosmi . . . ortu*, Oppenheim 1617.

Tract. II, *De . . . Technica Macrocosmi historia*, Oppenheim 1618
(2nd ed. 1624).

Vol. II, *De . . . Microcosmi historia*,

Tract. I, *De integra Microcosmi harmonia*, Oppenheim 1619.

Tract. II, Portiones I, II, Frankfurt 1621 (with an appendix *Veritatis proscenium*).

Tract. II, Portio III, *Anatomiae Amphitheatrum*, Frankfurt 1623
(with an appendix *Monochordum mundi*, 2nd ed.).

Tract. II, Portio IV, *Philosophia sacra*, Frankfurt 1626.

Monochordum mundi, Frankfurt 1622.

Medicina Catholica,

Vol. I, Tract. I, *Sanitas Mysterium*, Frankfurt 1629 (with an appendix
Sophiae cum moria certamen).

Vol. I, Tract. II, *Integrum Morborum Mysterium*, Frankfurt 1631.

Doctor Fludd's Answer unto M. Foster, London 1631.

Clavis Philosophiae et Alchymiae Fluddanae, Frankfurt 1633.

Philosophia Moysaica, Gouda 1638 (with an appendix *Responsum ad . . . Fosteri*,
2nd ed.).

Mosiacall philosophy, London 1659.

FURTHER REFERENCES

- Abert, H.*, 'Die Musikanschauung des Mittelalters und ihre Grundlagen', Halle 1905.
- Agrippa, C.*, 'De Occulta Philosophia Libri Tres', 1533 (without indication of place).
- Arnold, P.*, 'Histoire des Rose-Croix', Paris 1955.
- Blume, F.*, article 'Fludd' in *MGG*, Vol. 4, clms. 438-42.
- Bouterwek, F.*, 'Erinnerung an die Naturphilosophie einiger Ärzte, Kabbalisten und Rosenkreuzern aus den vorigen Jahrhunderten', Neues Museum der Philos. Literat., Leipzig 1805.
- Carpenter, C.*, 'Music in the Medieval and Renaissance Universities', Norman, Oklahoma 1958.
- Caspar, M.*, 'Johannes Kepler', Stuttgart 1950.
- Cassirer, E.*, 'Das Erkenntnisproblem in der Philosophie und Wissenschaft der neueren Zeit', 2nd ed., Berlin 1911.
- Craven, J. B.*, 'Doctor Robert Fludd, The English Rosicrucian. Life and Writings', Kirkwall 1902.
- Dahlhaus, C.*, 'Der Dreiklang als Symbol', *Musik und Kirche*, Vol. 25 (1955), pp. 251ff.
- Dictionary of National Biography*, London 1908-09.
- Eliade, M.*, 'Mythes et Symboles de la Corde', *Eranos-Jahrbuch* Vol. 29 (1960), pp. 109-137.
- Fellerer, K. G.*, 'Agrippa von Nettesheim und die Musik', *Archiv für Musikwissenschaft*, Festheft W. Gurlitt, pp. 77ff.
- Ficino, M.*, 'Opera omnia', Basileae 1576.
- Forkel, J. N.*, 'Allgemeine Litteratur der Musik', Leipzig 1792.
- Franck, A.*, 'Dictionnaire des Sciences Philosophiques', Paris 1875.
- Frey, L.*, 'Die Anfänge der Tiefenpsychologie von Mesmer bis Freud (1780 bis 1900)', in 'Studien zur analytischen Psychologie C. G. Jungs', Zürich 1955, Vol. I, pp. 1ff.

- Fuller, Th., 'The History of the Worthies of England', London 1662.
- Gassendi, P., 'Examen Philosophiae Roberti Fluddi', in 'Opera omnia', Vol. III, Lyon 1658.
- Georgius, F. V., 'De Harmonia Mundi Totius Cantica Tria', Venedig 1525.
— 'In Scripturam Sacram Problemata', Venedig 1536.
- Hammerstein, R., 'Die Musik der Engel', München 1962.
- Ebreo, L., 'Dialoghi d'amore', a cura di S. Caramella, Bari 1929.
- Heisenberg, W., 'Das Naturbild der heutigen Physik', Rowohlts deutsche Enzyklopädie, Vol. 8, Reinbek near Hamburg 1955.
- Hollander, J., 'The Untuning of the Sky. Ideas of Music in English Poetry 1500-1700', Princeton 1961.
- Hutton, J., 'Some English Poems in Praise of Music', English Miscellany, II, 1951, pp. 1-63.
- Josten, C. H., 'Truth's Golden Harrow; An unpublished Alchemical Treatise by Robert Fludd', in 'Ambix, The Journal of the Society for the Study of Alchemy and Early Chemistry', Vol. III, April 1949, Nos. 3-4.
- Jung, C. G., 'Psychologie und Alchemie', 2nd ed., Zürich 1952.
- Katsch, F., 'Die Entstehung und der wahre Endzweck der Freimaurei', Berlin 1897.
- Kayser, H., 'Akroasis. Die Lehre von der Harmonik der Welt', Stuttgart 1947.
- Kepler, J., 'Gesammelte Werke', ed. Walter von Dyck and Max Caspar, München, 1937ff.
— 'Weltharmonik', transl. by M. Caspar, München - Berlin 1939.
- Kinkeldey, O., 'Franchino Gafori and Marsilio Ficino', Harvard Library Bulletin I, 1947, pp. 379-82.
- Lenoble, R., 'Mersenne ou la Naissance du Mécanisme', Paris 1943.
- Levèque, P., 'Aurea Catena Homeri, une étude sur l'allégorie grecque', Paris 1959.
- Lovejoy, A. O., 'The Great Chain of Being', Harvard University Press 1948.
- Machabey, A., 'Le Temple de la Musique', L'Orgue, No. 83, Avril-Septembre 1957, pp. 101-104.
- Mahnke, D., 'Unendliche Sphäre und Allmittelpunkt', Halle 1937.
- Mersenne, M., 'Quaestiones in Genesim', Paris 1623.
— 'Traité de l'Harmonie Universelle', Paris 1627.
— 'Harmonie Universelle', Paris 1633-37.
— 'Correspondance du P. Marin Mersenne', publiée par Mme Paul Tannery, editée et annotée par Cornelis de Waard avec la collaboration de René Pintard, Paris 1932ff.

- 'Musik in Geschichte und Gegenwart', Kassel 1949ff.
- Munk, W., 'The Roll of the Royal College of Physicians of London', 2nd ed., London 1878.
- Pauli, W., 'Der Einfluß archetypischer Vorstellungen auf die Bildung naturwissenschaftlicher Theorien bei Kepler', in C. G. Jung und W. Pauli 'Naturerklärung und Psyche', Zürich 1952.
- Pfrogner, H., 'Musik. Geschichte ihrer Deutung', Freiburg - München 1954.
- Pico della Mirandola, 'De Hominis dignitate', 'Heptaplus', 'De ente et uno', e scritti vari a cura di E. Garin, Firenze 1942.
- Protz, A., 'Mechanische Musikinstrumente', Kassel 1941.
- Schäpfke, R., 'Geschichte der Musikästhetik in Umrissen', Berlin 1934.
- Schneider, M., article 'Musik' (II. Religionsgeschichtlich) in 'Die Religion in Geschichte und Gegenwart', Vol. IV, clms. 1197ff., Tübingen 1960.
- Simon, E., 'Mechanische Musikinstrumente früherer Zeiten und ihre Musik', Wiesbaden 1960.
- Spaeth, S., 'Milton's Knowledge of Music', Princeton 1913.
- Spitzer, L., 'Classical and Christian Ideas of World Harmony', *Traditio*, II (1944), pp. 409-64; III (1945), p. 307-64.
- Überweg, F., 'Grundriss der Geschichte der Philosophie', 12th ed., Vol. III, Berlin 1924.
- Walker, D. P., 'Spiritual and Demonic Magic from Ficino to Campanella', London 1958, *Studies of the Warburg Institute*, Vol. 22.
- Walther, J. G., 'Musicalisches Lexicon', Leipzig 1732. Facs. Edition Kassel 1953.
- Wittkower, R., 'Architectural Principles in the Age of Humanism', London 1949, *Studies of the Warburg Institute*, Vol. 19.
- Vasoli, C., 'Francesco Giorgio Veneto', in 'Testi Umanistici su l'Ermetismo', Testi di L. Lazzarelli, F. G. Veneto, C. Agrippa di Nettesheim, a cura di E. Garin, M. Brini, C. Vasoli, C. Zambelli, Rom 1945.

THE MUSICAL THEORY AND PHILOSOPHY OF ROBERT FLUDD*

*Reprinted from the Journal of the Warburg and Courtauld Institutes.
Volume XXX, 1967.*

The large amount of space in his writings which Robert Fludd (1574–1637) devotes to music—music in the widest sense of the word—proves the importance which this subject held in his philosophy. In his *Tractatus apologeticus*¹ Fludd gives a first sketch of his conception of music. In his great history of the macrocosm and microcosm, *Utriusque cosmi . . . historia*,² he devotes a detailed treatise to each of the three parts of music traditional since Boethius, *musica mundana*, *musica humana*, and *musica instrumentalis*. Later, in his polemic writings against Kepler and Mersenne, Fludd defends his philosophy of music and further elaborates it. It is not easy to summarize the contents of Fludd's main writings on music because his musical theory forms an integral part of the vast building of his philosophy. On the other hand, it is perhaps the most eloquent symbolical expression of his approach to the problems with which the philosophers of his time were faced.

The Tractatus apologeticus

Fludd published his first book, the *Tractatus apologeticus*,³ with the express purpose of defending the Rosicrucians against the violent attacks of Andreas Libavius. It already contains many thoughts which he elaborated in later books. Fludd's propositions in the *Tractatus* can be summarized as follows: Fludd fights the ruling Aristotelian philosophy. He thinks that the orthodox arts and sciences, among them the science of music, deal only with the surface or shadow of things, whereas true philosophy should concern itself with their inner, invisible, secret, and miraculous essence. This philosophy is now lost, but was once known to the prophets of the Old Testament and to some Greek philosophers, in particular to Moses and Plato. The Rosicrucians' promise to bring back and to revive the lost philosophy coincides with Fludd's own innermost hopes and wishes. He wants to show that the miracles which the Rosicrucians had promised are not works of the devil, but can be explained by the miraculous nature of light.

The revival of a lost pristine philosophy and the belief in its miraculous effects are the context in which Fludd's ideas on music as developed in the *Tractatus apologeticus* have to be placed. He advocates a reformation of the science of music as of all other sciences. The commonly known and practised music, *musica instrumentalis*, is only the shadow of the true and deeper music, of *musica mundana* and *musica humana*, both which have reference to the order of the world, the place of man in the cosmos, and to his own inner structure. But this music, as well as the miraculous variety of Orpheus and Arion, is lost.

* I wish to express my particular thanks to F. A. Yates and D. P. Walker for giving me much welcome advice, and to C. H. Josten for his generous assistance in preparing this article for publication.

¹ Leyden, 1617.

² Published at Oppenheim from 1617 onwards.

³ Fludd's *Apologia compendiaria*, a short announcement of this work, had, however, been printed 1616 at Leyden.

It has to be rediscovered, for through it man may recognize himself and thus finally attain a mystical knowledge of God.⁴

In a special chapter entitled *De occultis et admirandis Musices arcanæ effectibus*⁵ Fludd tries to explain a fantastic promise which the Rosicrucians had made in the *Confessio*,⁶ from which he quotes:

Qui voce oris vel organi musici sic canere exoptat, ut non saxa illa Amphionis, sed margaritas et gemmas attrahat, nec bestias Orphei, sed spiritus, non Plutonem ex Tartaro, sed principes mundi potentes, is intret Fraternitatem.⁷

Fludd derives his explanation of this fantastic promise from his conception of the world as a harmonic cosmos of spheres and correspondences. As one string moves another tuned to the same or a consonant note, so the jewels which are replete with the nature of the Sun, may be moved by the sound or the voice of man, if he knows the true sound of Apollo, that is to say of the Sun.⁸ With regard to the attraction of the mighty princes of the world, Fludd observes that, according to Plato, music penetrates the soul of man by subtly stirring the air, and thus it may indeed move not only ordinary men, but also princes.⁹ Later on in this paper further details of this theory, as well as its derivation, will be discussed.¹⁰

⁴ Fludd, *Tract. apol.*, pp. 108–12. Fludd concludes that passage on music as follows: 'In hac ergo scientia, reformatio requiritur; cum apud vulgus minima ejus pars, pro maxima et meliori ejus portione accipiat. Immo musica communiter apud nos cognita, et usurpata non aliter se habet ad musicam illam profundam et arcanam Naturæ, quam albedo ad parietem, aut superficies ad corpus; nam musica instrumentalis aut vocalis solummodo ab hominibus usurpatur, quia umbra voluptatis aures eorum permulcere videtur; mundana vero, et humana, prorsus negliguntur, et ignorantur, quibus anima humana ad sui creatoris sedem sublimari et exaltari potest.'

⁵ *Ibid.*, pp. 177–83.

⁶ *Fama Fraternitatis. Beneben Confession oder Bekenntniss derselben Fraternitet, an alle Gelehrte und Häupter in Europa geschrieben*, Frankfurt 1615.

⁷ Fludd, *Tract. apol.*, p. 177.

⁸ *Ibid.*, pp. 179–81: 'Cui igitur datum est veros tonos Phoebæos cognoscere, eosque in actum sensibilem producere, ipsorum harmonia res omnes ab eo [Apolline] originaliter conflatas, ad se attrahere et allicere non erit res impossibilis. Margaritas vero aethereae naturæ plenæ esse videmus, et caeteras gemmas preciosas tam aetherea quam solari symphonia decoratas et verisimile erit, quod cum unisonus Harmoniæ coelestis sit in sono et voce, eadem consonantia etiam virtute

medij seu spiritus aerei accidere possit, quæ corpora margaritarum et Gemmarum moveantur: hocque declaratur experimento sequenti. Nam si duas Citharas super eandem mensam collocaverimus, et paleam super chordam unius posuerimus, si chorda alterius, unisonum ad illam chordam paleam portantem sonans, percutiatur, chorda paleam retinens statim vibrabit, et movebit, paleamque suam subito motu eijciat: Ex quibus admirandam referentiam unius creaturæ ad alteram colligere, virtute hujus harmoniæ possumus . . . Si hujusmodi omnia succincte examinaverimus, inveniemus non esse magis extra naturæ potestatem, ut sapiens sua harmonia essentificam coeli aetherei substantiam, in corporibus inferioribus abditam, movere faciat, quam anima in animali sita corpus ejusdem pro placito huc vel illuc urgeat. Nam musica, *per aeream naturam in motu positam, movet corpus, et per purificatum aerem concitat spiritum, aereumque animi et corporis nodum.*' The last sentence printed in italics is a quotation of Ficino; see below, pp. 219–20.

⁹ *Ibid.*, pp. 181–2: 'Quod vero ad musices operationem admirabilem in homine attinet, secundum Platonis doctrinam in 3. Repub. Quoniam *per subtilis aeris motum interiora animi penetrat, eumque vehementissime pulsant, et decoram quandam figuram in eo imprimunt, per affectum afficit sensum, per significationem agit in mentem, per contemplationem mulcet suaviter. Per conformem*

De Musica mundana

In 1617 Fludd published also the first treatise of his voluminous *Utriusque cosmi . . . historia*, the first volume of which is devoted to the history of the macrocosm. The third book of that treatise, comprising about thirty pages, is called *De Musica mundana*. Fludd's theory of the inter-penetrating pyramids which he himself calls the principal key to his philosophy,¹¹ also provides the key to an understanding of this book: The creation of the world consisted in the separation of the opposite principles of light and darkness, or of *forma* and *materia*, which were both originally indistinctly contained in God. Revealing Himself, God expelled darkness from his luminous presence, that is from his seat, the top of the Heavens, downwards to their deepest centre. This process of separation and its result are represented by two opposite pyramids (Pls. 26a, 23a). The formal pyramid whose basis is the divine origin of light represents the emanation of this principle. Its summit reaches the centre of the dark earth. On the other side, the earth is the basis of the material pyramid, which represents the *materia* ascending towards God. Thus the two pyramids represent the reciprocal increase and respective decrease of form and matter in the hierarchical structure of the cosmos. Each thing has its place assigned in it, according to its proportionate intrinsic participation of light and darkness. The universe is divided into three regions, the region of the elements, that of ether or the planets, and that of the angelic hierarchies (Pl. 23a). Between the two extremes lies the so-called *sphaera aequalitatis*, where the two opposite principles are in their exact equilibrium. There the invisible and uncreated Sun of the archetypal world has established its tabernacle, which means that there the visible Sun, i.e. the *anima mundi*, as the principal animator of the created world, has its seat.¹²

Fludd bases his ideas in *De Musica mundana* on this theory of the pyramids. Everything between the earth and the top of the Empyrean receives its proportions from the effects of the primary light on matter, i.e. through the *actio* and *passio* of the two pyramids. The harmony of the world is constituted by these proportions.¹³ As in his theory of the pyramids, Fludd assumes two poles in this musical analogy. The instrument of this music, the world, is like a monochord (Pl. 23b). Its string, which induces the harmony of the different parts of the world, is represented by the *materia* extended between the two

qualitatem mira quadam voluptate profundit naturam, tam spiritualement, quam materialem, totumque simul rapit et vendicat hominem ipsum reddens liberalem, laetum, et amabilem. Non igitur dubitandum erit, quin mirabilem habere possit musica potestatem movendi, non modo vulgares homines, sed etiam principes ipsos . . .' The passage printed in italics is a quotation of Ficino into which quotations of Plato and Guido d'Arezzo have been inserted; see below, pp. 219–20.

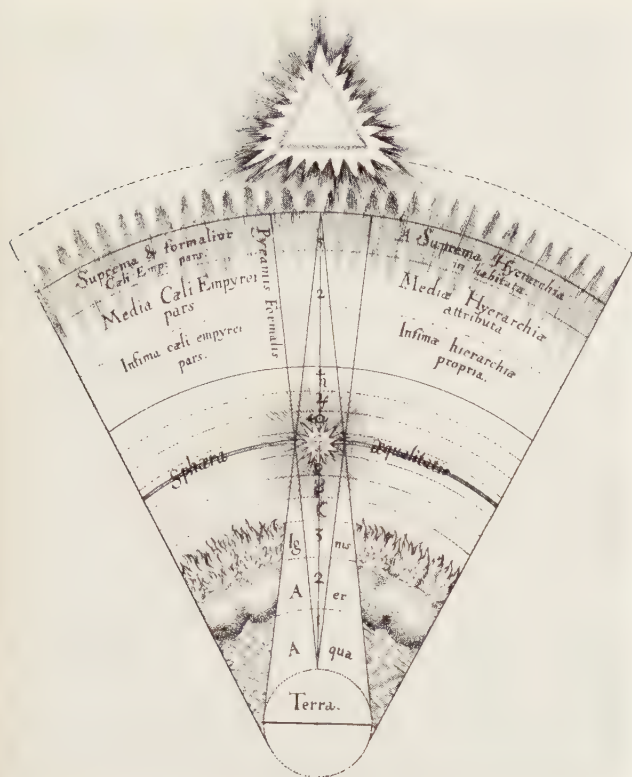
¹⁰ See below, pp. 219–20.

¹¹ Fludd, *Utriusque cosmi . . . historia*, ii, Tract. i, Oppenheim, 1619, p. 191. Fludd describes that theory in a special treatise 'De speculativa Pyramidum Metaphysicae et

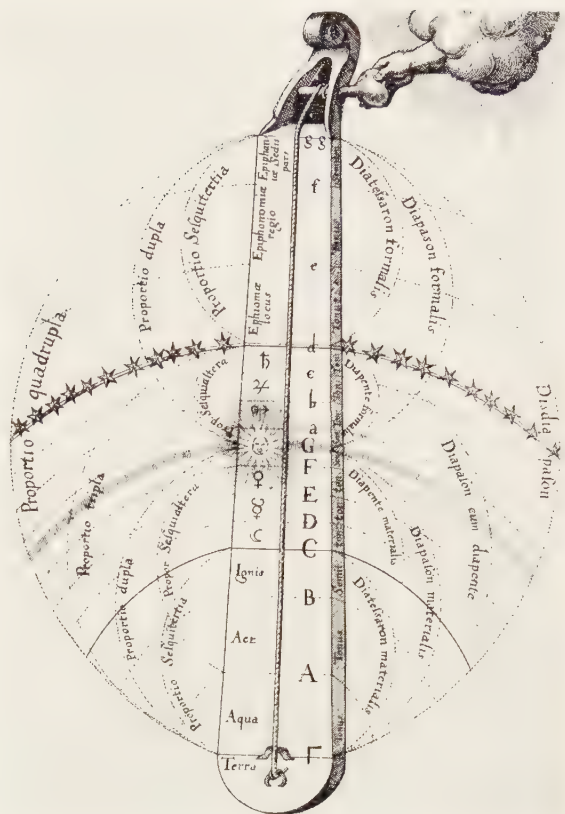
physicae Scientia', *ibid.*, pp. 179–91.

¹² See below, p. 202, note 19.

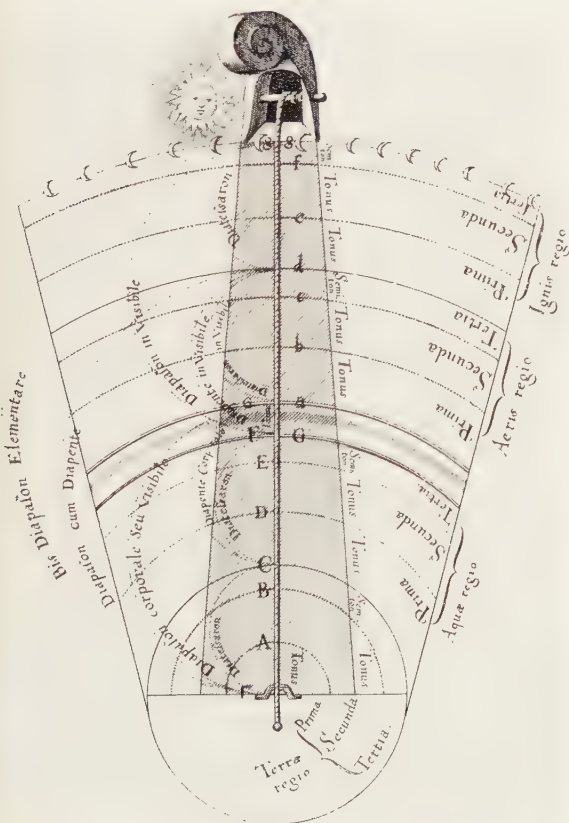
¹³ Fludd, *Utriusque cosmi . . . historia*, i, Tract. i, p. 79: ' . . . harmoniam mundanam perquam nobilem illae rerum proportionibus inducunt, per quas operante in materiam intermediam lucis primariae virtute, indissolubilis rerum concordia conciliatur . . . ' *Ibid.*, p. 80: ' . . . omnia inter terrae margines et summam coeli Empyreii peripheriam accepisse proportionibus suas a duarum harum pyramidum actione et passione; ex quibus etiam omnes Macrocosmi proportionibus et consonantiae harmoniam mundanam constituentes derivantur.'



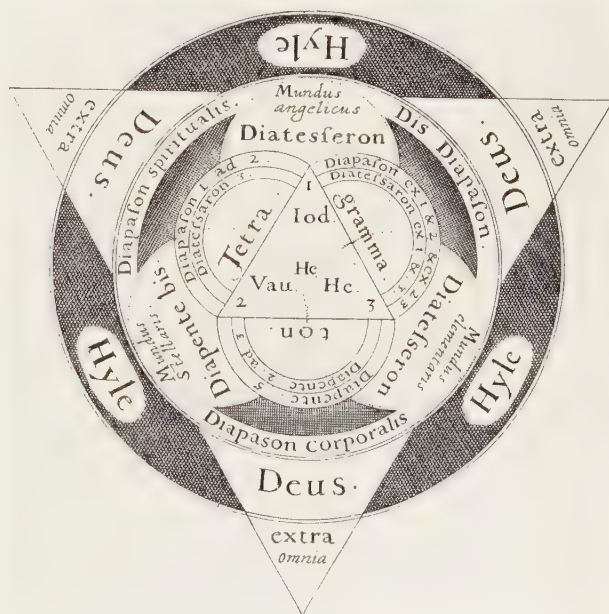
a—Inter-penetrating pyramids representing increase and decrease in the cosmos. *Utriusque mundi . . . historia*, i, Tract I, p. 89 (pp. 200, 203)



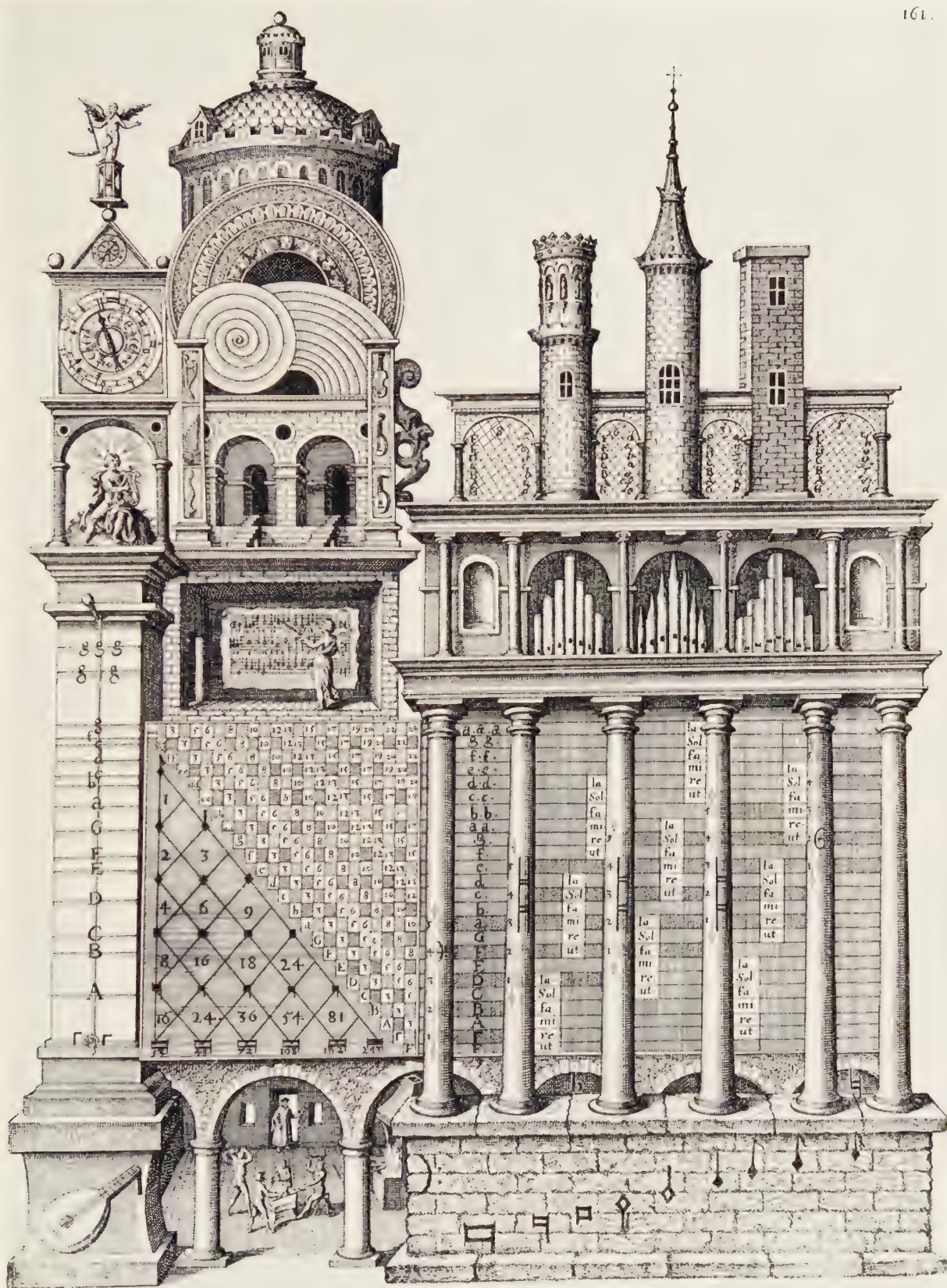
b—*Monochordum mundi* correlating intervals of two octaves with spheres of elements, planets and angels. *Utriusque mundi . . . historia*, i, Tract I, p. 90 (pp. 200ff., 215)



c—*Musica elementaris*: a monochord correlating intervals of two octaves with spheres of the four elements. *Utriusque mundi . . . historia*, i, Tract I, p. 100 (p. 205)



d—The ternary of the Trinity in all its possible permutations. *Utriusque mundi . . . historia*, ii, Tract I, p. 62 (p. 207)



Templum Musicae epitomizing the various parts of *musica practica*. *Utriusque mundi . . . historia*, i, Tract II, p. 161 (pp. 205f)

extremes. The author of this music is the *anima mundi*, or the essential light,¹⁴ or, in other passages, God. Here Fludd explicitly calls God *pulsator Monochordii*.¹⁵ He likens the player and his instrument to the opposite principles forming the interpenetrating pyramids. They are both as necessary in the production of the *musica mundana* as the player and his instrument are necessary in the production of instrumental music.¹⁶ As in the scale of human instrumental music the deepest note, Γ , leads to the highest one, *ee la*, so likewise in the monochord of the world as the tones get higher and the voice more intense the *spiritus mundi* gets thinner while light and warmth increase.¹⁷

The monochord of the world is divided into several regions of consonance. It is well-known that, if a string is divided into two equal parts, each half will produce the octave of the tone produced by the whole string, which is the most consonant interval. Two thirds of the entire string produce the interval of the fifth, three quarters of the entire length the interval of the fourth. The intervals of the fifth and the fourth are both very consonant, though not as consonant as the octave. If the intervals are arranged in order of their consonance, starting with the most perfect one which at the same time is also the simplest proportion, the following scale results:

Octave	1:2
Fifth	2:3
Fourth	3:4

In conjunction with early astronomical observation this amazingly well-ordered scheme of proportions, whose grades the human ear can clearly distinguish by immediate perception as the experimenter can verify them by measuring the length of the string, is probably the very foundation of man's

¹⁴ *Ibid.*, p. 79: 'Hujus namque melodiae instrumentum, machina scilicet mundi, est quasi monochordum, cuius chorda, per quam consensus partium introducitur, est intermedia totius mundi materia. Autor autem in hac musica existit mundi anima seu lux essentifica . . .'

¹⁵ See below, p. 207, note 45, and p. 210, note 58.

¹⁶ *Ibid.*, p. 85: 'Quoniam omnes istae proportionales in qualibet praedicta pyramide per se nihil valent ad producendas consonantias musicas sine utriusque commixtione (neque enim barbiton sine musico, nec musicus sine barbito ad consonantias musicas faciendas sufficit) idcirco necessario concurrere debent ad harmoniam mundanam constituendam pyramides utraeque, tum scilicet materialis, quae loco instrumenti musici, seu chordae monochordi, aut instrumenti et spiritus canentis est, tum etiam formalis, quae officium animae pulsantis vel canentis vocisque producentis praestat.'

¹⁷ *Ibid.*, pp. 79-80: '. . . haud secus, quam in musica illa hominis instrumentali, in qua

Γ . id est, Gamma, ut principium sumit ab inferiori systematis parte, ascendendo cum gravibus, excellentibus, et superexcellentibus vocibus; Talis nimirum fit etiam in monochordo mundano progressus, nempe a terra proportionaliter ad suum *ee la*, ascendendo, quod terminus est ultimae peripheriae: Et ut in Γ . gravior et profundior est sonus propter extremam ejus distantiam ab *ee la*, a quo ascendendo intensior fit vocis percussio; sic etiam quo altius a terra versus coelum Empyreum ascenditur, eo fortior lucis et caloris effectus invenitur, tenuiorque ejus virtute redditur spiritus mundanus; quemadmodum etiam ad vocis humanae elevationem major vis, ac proinde major animae lucidae virtus requiritur, in ejus vero depressione minor omnino desideratur; sic etiam major animae mundanae proportio in elatiori et subtiliori mundi spiritu invenitur, et per consequens acutiorem reddit harmoniam et excellentiorem, in depresso vero et spissiore minor; unde graviore et profundiores harmoniae effectus producere dignoscitur.'

early belief in a harmonious numerical order of the macrocosm and in the harmony of the spheres.

Fludd divides the monochord extending between the Empyrean and the earth into two equal parts, i.e. into two octaves.¹⁸ The centre of the monochord, thus denoting the octave or the ratio 1:2, corresponds to the central position of the *sphaera aequalitatis*. The upper half of the monochord is called the spiritual octave giving eternal life; the lower one is the material octave and represents the transitoriness of the created world.¹⁹ The two octaves of the monochord thus repeat the polarity expressed by the theory of the pyramids. The further division results from the other proportions developed in that theory. Every entity is conceived as composed of four quarters. Pure light and pure matter as found at the base of either pyramid consist of four identical quarters.²⁰ Everything else is a compound of light and matter. The intermediate regions, that is the elementary, ethereal, and empyreal regions respectively, consist of three, two, and one, parts or part of matter, and reciprocally of one, two, three part or parts of light (Pl. 26a). The ratios of light and matter, of 4:3 and 3:2, produce the division of each octave into a fourth and a fifth.²¹ Dividing the octave in this way, Fludd conforms to the phenomena of acoustics, but he does not do so in his geometrical division of the monochord as shown in his illustration (Pl. 23b). The lengths of the fourth and the fifth are arbitrarily adapted to the three regions of the universe which are represented as being of equal length.

The main intervals, the octaves, the fifths and the fourths, remained to be filled in, and thus the gamut of the world was completed. The starting-point of the world's music is the place of the earth, corresponding to the deepest note in music. Fludd co-ordinates to each of the spheres of water and air a major tone, but to that of fire a semitone, because, he says, the sphere of fire is only the *summitas regionis aeris accensa*.²² Thereby he completes the so-called material fourth. The material fifth, which comes next, consists of the three tones of the moon, of Mercury and of Venus, plus the semitone of the lower half of the Sun's sphere.²³ The material octave ends at the central point of

¹⁸ *Ibid.*, p. 85: 'Etenim si monochordum a summitate coeli Empyrei ad basin ipsius terrae imaginative extendatur, radium cujuslibet pyramidis constituens, percipiemus ipsum in partes consonantias constituentes dividi; cujus dimidia pars si premeretur, consonantiam Diapason ederet, quemadmodum etiam in monochordo instrumentali idem illud evenire docet experientia.'

¹⁹ *Ibid.*, p. 82: '... invenimus sphaeram aequalitatis totius mundi, et ipsius animae mediae locum, in quo lux increata tabernaculum suum posuit, animamque mundi collocavit: Imo haec sphaera aequaliter a parte tum superiore tum inferiore perfectionem consonantiae magis perfectae recipit; nam ab ipsa ascendit Diapason spirituale et ad ipsam ascendit Diapason materiale; In dupla enim proportionem se habet ad terram, et ad locum et sedem formae simplicissimae:

In ejus ergo regione consonantiae perfectissimae musicam vitalem producant; cujus monochordi spiritualior pars, si pulsetur, vitam aeternam dabit, materialior autem pars transitoriam.'

²⁰ *Ibid.*, p. 82: '... interiores terrae partes, cum quaelibet res ex quatuor quartis componatur, quatuor frigiditatis testimonia ob integram lucis absentiam retineant et possideant ...' *Ibid.*, p. 83: '... ejus [formalis pyramidis] fons mere formalis et increatus ... nullam materiae portionem in se habet, ac proinde cognoscitur ex quatuor caliditatis quartis, hoc est, ex perfectissima simplicitate et absoluta homogeneitate constare.'

²¹ *Ibid.*, p. 82.

²² *Ibid.*, p. 86.

²³ *Ibid.*, p. 86: 'Talis [Diapente] enim est differentia inter lunam et solem, cum inter convexitatem hujus coeli et medietatem

the sphere of equality, where *materia* and *forma*, as Fludd says, unite so intimately that they can never be separated.²⁴ As the material fifth lies below the sphere of equality, so the formal one is above it. It consists of the upper semitone of the Sun's sphere, and the tones of Jupiter, of Mars and of Saturn. The degree of purity assigned to the fifth is intermediate between that of the octave and that of the fourth. For that reason it is analogous to the middle region of ether. The ethereal heaven is eternal and yet less perfect than the highest Empyrean. I⁺ is situated therefore, between that highest heaven and the less perfect elementary one.²⁵ This intermediate position of the fifth is, in Fludd's opinion, the reason why some philosophers call the ether *quinta essentia*.²⁶ After the formal or spiritual fifth, the formal or spiritual fourth follows. Its *spiritus* is so very subtle that it may be conceived as freed from all corporeity. Its three intervals are equalled to the three angelic hierarchies. The tones are assigned to the two lower of these hierarchies, while the upper semitone is stated to correspond to the angelic *Epiphanies*, especially to the *Seraphim*. The three intervals exist outside the limitations of matter and, by virtue of the ineffable splendour which the divine presence sheds on them, they are almost entirely formal. The spiritual octave is thus completed. Its perfection transcends human understanding in so far as it terminates in the extreme purity of the divine triangle (Pl. 23a). It is the very peak of perfection and purity and, beyond it, there is God alone.²⁷

According to Fludd, the hierarchy of this monochord of the world reflects the grades of all material and spiritual things like a mirror.²⁸ The intervals of the scale are the degrees of the descent of the formal principle into matter. The created Sun receives all its powerful light through the harmony of the formal octave from God, the uncreated Creator, and the earth receives the divine influences through the material octave.²⁹ All generations are subsolar

sphaerae solis quatuor sint intervalla, nempe integrae lunae, Mercurii et Veneris sphaerae, integris tonis comparatae, et dimidia solaris sphaerae pars, quam Semitonio composuimus.³

²⁴ *Ibid.*, p. 86: '... punctum exactae aequalitatis . . . est verus consonantiae magis perfectae terminus, ubi talis est unio et amplexus materiae cum forma, ut nunquam fieri possit separatio et divisio . . .'

²⁵ *Ibid.*, p. 86.

²⁶ *Ibid.*, p. 86: 'Atque haec unica fuit ratio, cur Philosophorum nonnulli substantiam ejus nomine Quintae essentiae insigniverunt, quandoquidem ejus compositio respectu utriusque coeli extremi magis de consonantia Diapente participavit.'

²⁷ *Ibid.*, pp. 87-8: '... cujus [spiritualis Diatessaron] spiritus subtilissimus etiam, veluti transformatus et liberatus a corporea substantia, in tria ulterius intervalla dividitur, quae tribus Hierarchiis attribuuntur; quorum duo orbis inferiores tonis integris, superior vero Semitonio assimilatae, quatenus Epiphaniae ordines, et praecipue Seraphin

tanquam ipsi Deo administrantes dicuntur, extra materiae limites sese extendunt, et ob splendorem ineffabilem, quem a divina praesentia accipiunt, quasi penitus formales repuntantur. Ex his igitur concordantiis junctis provenit Diapason spirituale, cujus perfectio captu humano comprehendere non potest, quoniam in triangulari purissimae formae natura desinit. Est igitur summum totius perfectionis, altitudinis et puritatis mundanae fastigium, ultra quod nihil praeter unicum et solum Deum existit.'

²⁸ *Ibid.*, p. 87: 'Hinc igitur gradus materialium omnium, tanquam in speculo conspiciuntur; atque inde etiam oculis intellectus scala et ordo spiritualis manifestatur.'

²⁹ *Ibid.*, p. 88: 'Concludimus igitur Solem naturae Deum, sed creatum, virtute harmoniae spiritualis per Diapason formale cum intervallis suis proportionaliter ordinatum accipere omnem formalem et lucidam virtutem a Deo omnium maximo, supernaturali creatore increato; terram vero per Diapason materiale ejusdem Dei influentias accipere . . .'

and receive their vital strength from the lower, material, semitone of the solar sphere. Conversely these intervals are the degrees of the ascent towards God: every regeneration derives its origin from the upper semitone of the solar sphere whence the summit of spirituality may be reached. Therefore, anything that does not attain the upper region of the solar sphere, cannot gain the perfection of regeneration and cannot be transformed from matter into spirit.³⁰

Fludd proposes to prove these speculations by practical experiment.³¹ This proof turns out to be nothing else than the oldest science of human experiment, astrology, whose notions he tries to fit into the divisions of his monochord: The fifth is stated to correspond to the special influence of the Moon on the element of earth, of Mercury on water, of Venus on air, and of the lower part of the Sun's sphere on fire. The fifth explains the Moon's strong and varying influence on things terrestrial. Mercury causes inundations and perturbations of the seas; also, jointly with the Moon, the tides. For Mercury's subtle pneuma dwells concealed in the waters which are related to it by the fifth. By the fifth Venus is linked to the air in a suave and loving concordance. Venus and air share the warmth and humidity which favour procreation in animals and plants. Lastly, the lower part of the solar sphere imparts its influences, by means of the fifth, to the sphere of elemental fire whence they proceed to contribute towards the multiplication and perfection of plants. More important than the influence of the fifth is the influence of the perfect octave. The octave between the Sun and the earth causes all action, generation and perfection in life on earth. The influence of Jupiter's octave is well received by the sphere of the air, both being of essentially the same warm and moist nature. But the influences of Mars and Saturn are evil because the octave of Mars ends in the element of water and the octave of Saturn in that of fire, i.e. in elements whose nature is contrary to that of these planets.³²

³⁰ *Ibid.*, p. 87: 'Generationes igitur omnes sub sole fiunt vimque suam ab inferiori solis sphaerae semitonio minori, quod materiale supra appellavimus, accipiunt; At vero regenerationes omnes a Semitonio orbis solaris superiori ortum habent, a quo ad spiritualitatis summitatem fit sublimatio. Proinde quae ad orbis solaris fastigium non pertigerunt, ea non possunt acquirere regenerationis perfectionem, nec fieri spiritualia ex corporalibus.'

³¹ *Ibid.*, pp. 101-4.

³² *Ibid.*, pp. 101-2: 'Atque haec est ratio, quod Luna assidue tam fortiter et strenue in haec inferiora ac praecipue in terram agit per influentias suas. Similiter *sphaera Mercurii* Diapente in sphaeram aquae resonabit: Hinc igitur aquarum inundationes, mariumque perturbationes propter tenuem et flatuosum spiritum Mercurialem in illis occultatum, pariterque etiam hujus ope cum adjumento Lunae fit fluxus et refluxus maris. Porro quoque simile consonantia refertur *Venus* ad sphaeram aeris, quae symphoniam blandam

et suavem habet in aere, propter exactam suarum proportionum concordiam: Hinc aer in se retinet easdem qualitates, quas Venus habet, videlicet caliditatem et humiditatem, quae vitae animali semper sunt propitia; imo et ipsis plantis loco humidi radicalis inserviunt cum spiritu iis proprio. Sphaerae denique *Solis* pars infima in sphaeram ignis influentias suas spargit, quae simul in haec inferiora deferuntur, et ad plantarum multiplicationem ac perfectionem virtute consonantiae Diapente conferunt. Sed, ut ad consonantiae perfectioris vires et facultates perveniamus, quae inter terram et sphaeram aequalitatis reperitur, omnes vitae cujusque animalis terrestres perfectiones ab hujus consonantiae intervallis provenire certum est, materiae nempe corporeae incrementum et vivacis illius formae vitales actiones ac motus; Unde ad exactam rerum materialium perfectionem est haec omnium praedictarum consonantiarum efficacissima. *Mars* etiam quamvis in sua natura et per se sit valde utilis, attamen, quia ejus Diapason se

In two special chapters Fludd deals with music in the region of the elements in particular.³³ Here the two octaves of the monochord are transferred to the region of the elements and extend between the extremes of the spheres of earth and fire (Pl. 23c). Each element consists of a fourth. This relatively impure consonance, Fludd remarks, is best suited to the impure region of the elements.³⁴

De Templo Musicae

In his history of the macrocosm Fludd describes not only *musica mundana*, but also *musica instrumentalis*. The second treatise of the *Utriusque mundi . . . historia*, vol. i, published for the first time in 1618, consists of ten books on different subjects, one of which is called *De Templo Musicae*.³⁵ Fludd states that he wrote this book, at least in outline, in the 1590's when he was a student at Oxford.³⁶ Afterwards, when he was for several years travelling and teaching on the continent, he dedicated it to the Marquis de Orizon, Visconte de Cadenet, whom he taught musical theory.³⁷ It is a so-called *musica practica*, an elementary treatise of practical music. It reflects Fludd's predilection for graphic representation, inasmuch as it epitomizes its material in an elaborate symbolical frontispiece (Pl. 24). His explanation of this frontispiece may be paraphrased as follows:

(1) The spirals of the big tower on the left denote the movement of air caused by sound or voice; the double gates below, which are surrounded by six musical instruments, denote the ears through which alone sound may gain access to the temple.

(2) The three towers on the right denote the three hexachords: the round one the *hexachordum molle*, the square one the *hexachordum durum*, and the pointed one in the centre the *hexachordum naturale*.³⁸ Underneath, between the columns, the names, pitch, and keys of these hexachords are noted with reference to a staff comprising a little more than three octaves.

extendit ad sphaeram aquae, ideo infausta est haec stella viventibus inferioribus, quoniam ob contrariam suam cum aqua naturam producit contra vitam rebelles et malitiosas in haec inferiora operationes . . . *Jupiter* . . . benevole a sphaera aeris accipitur, qui melodia ejus ex proportionem dupla consistente mirifice delectatur, nam omnimodo in naturarum et qualitatum proportionem conveniunt, praeterquam quod aer de natura inferiori, sphaera autem Jovis de superiori participat; sunt enim ambo calidi et humidi: Hinc igitur est, quod inprimis ad vitam animalem conferunt . . . Ultimum denique hujus regionis intervallum a Saturno gubernatur, quod ad intervallum elementi ignis se habet in dupla proportionem, in qua Diapason consistit: At vero, quoniam natura Saturni et illa sphaerae igneae sunt contrariae, ideo melodia talis, quamvis uni fortasse atque alteri speciei prodesse soleat, turbida tamen

est et injucunda, imo et generi animali malitiosa; nam terminante sese frigida Saturni natura in calida illa ignis, repugnat caliditatis qualitas frigiditate . . .

³³ *Ibid.*, pp. 95–100.

³⁴ *Ibid.*, p. 98: ' . . . probavimus, Diatesaron, quod est consonantia imperfecta, inveniri solummodo propter impuritatem suam in qualibet infimae mundi regionis sphaera. Hoc vero in loco clarissimam hujus rei demonstrationem faciemus, qua ostendemus evidenter, quamlibet hujus regionis elementaris sphaeram ex tota consonantia Diatesaron conflari . . . '

³⁵ Fludd, *Utriusque mundi . . . historia*, i, Tract. ii, pp. 159–259.

³⁶ *Ibid.*, pp. 701–2.

³⁷ *Ibid.*, p. 3.

³⁸ See *Die Musik in Geschichte und Gegenwart*, vi, 1957, cols. 349–58, Art. Hexachord.

(3) In the lower left-hand corner a pillar illustrating the division of the monochord stands on a pedestal, which is adorned with a lute of six strings. The geometrical proportions of the division are accurately rendered.

(4) Orpheus holding his lyre is seen sitting on the capital of the pillar. Above him are two dials surmounted by an hour-glass on which Chronos is standing. The larger dial is marked with the notes of mensural notation; the smaller one shows the twelve hours.

(5) Through an archway in the basement of the building one sees a representation of the legend according to which Pythagoras discovered the ratios of the several consonances while listening to the sounds of hammers in a smithy. Above this scene a triangular graph indicates the ratios of perfect and imperfect measures. Another triangular graph, above the first, coordinates the consonances of all notes of the system. Thalia, the Muse, points to a polyphonic score which is placed above these two graphs.

The first five books of the treatise correspond to these five parts of the temple of music. The last two books deal with musical instruments. In the course of his later controversies with various scholars Fludd repeatedly refers to this treatise either to defend it or to elucidate the place which, in his theory of music, he assigns to *musica instrumentalis*.³⁹ He obviously possessed a good knowledge of *musica practica*. He described it graphically in that manner peculiar to him which is a mixture of strict systematizing and baroque 'hieroglyphs'. The English court musicians of his time received his inventions, as he himself asserts, with sympathy.⁴⁰ His claim to have encompassed in the abstractions of his *musica artificialis* the entire essentials of musical science, practically as well as theoretically,⁴¹ might be accepted by an amateur. From the point of view of a professional musicologist, however, Friedrich Blume's judgement comes nearer to the truth. In his opinion *De Templo Musicae* is completely antiquated in comparison to other, similar treatises of the period, but original in its presentation of the subject.⁴²

De integra Microcosmi harmonia

What might be called Fludd's *musica humana*—he does not use this term in the title, to be precise—is contained in the *Utriusque mundi . . . historia*, vol. ii, particularly in the first part of its first treatise, entitled *De integra Microcosmi harmonia*, published in 1619. Here the musical analogies are not compressed into some thirty pages as in *De Musica mundana*, but spread over two hundred and eighty pages, which also contain much other matter.

Fludd begins with an explanation of the divine numbers and their harmony. Unity is the source of all numbers and the origin of all things created and uncreated.⁴³ In music, the origin of harmony is the primordial unison from whose supra-substantial sound empyrean and spiritual music, *musica mundana*, *musica humana*, and *musica instrumentalis* all derive. The octave, the fifth, the fourth, as well as the compounds of the octave and the fifth and

³⁹ E.g. in his *Veritatis proscenium* (see below, p. 210, note 60), pp. 8, 10; see also below, p. 224, note 146.

⁴⁰ See below, p. 219.

⁴¹ *Ibid.*, p. 5.

⁴² See Friedrich Blume's article on Fludd in *Die Musik in Geschichte und Gegenwart*, iv, 1955, cols. 438–42.

⁴³ Fludd, *Utriusque mundi . . . historia*, ii, Tract. i, p. 41.

the double octave take their origin from the threshold of primordial sound whence the creative word issued.⁴⁴ God, the monad of monads, the unity above all units, intoned to the world that sacrosanct, mystical, and ineffable primordial sound by whose unisonous and uniform pulsation, touch and afflatus the world and its creatures were endowed with all the various concordant forms by which they might exist and live. That unity plays on the monochord. It is the form and the soul of the entire harmony of macrocosm and microcosm.⁴⁵

The mystery of the ternary is linked to this unity which is the very love inseparably uniting Father and Son. By the tie of the ternary, duality, issuing from the unity as a multiplicity of things, is reduced to a harmonious unity.⁴⁶ The ternary, uniting unity with duality, is reflected by the harmonious triple disposition of all things in the universe, such as the threefold division of the universe and the threefold consonances of the octave, the fifth, and the fourth. All things in the universe are ordered by the ratios of these three consonances. As the fifth is derived from the octave, and the fourth from octave and fifth conjoined, so also the second stratum of the universe derives from the first, and the third from the first and the second stratum conjoined.⁴⁷ The music of the universe and the music of man thus originate in the simple harmony of the Trinity.⁴⁸ The ternary of the Trinity in all its possible permutations always yields the three consonances of the octave, the fifth and the fourth. They are always in harmony and thus constitute and reflect the divine harmony (Pl. 23d).⁴⁹

In linking the supernatural, uncreated world to the material world, the octave plays an eminent part in connexion with the number seven. Seven is called the number of perfection because the simple intervals do not exceed

⁴⁴ *Ibid.*, p. 21: 'In Musica est concordiae et harmoniae origo, unisonus nempe ille primordialis, a cujus supersubstantiali tono melodia empyrea sive spiritualis, sive sit mundana, sive humana, atque etiam instrumentalis exoritur, quatenus scilicet a suae vocis seu soni radicalis (verbum producentis) termino Diatessaron, Diapente, Diapason, Diapason cum Diapente et Diadiapason consonantiae compositae derivantur.'

⁴⁵ *Ibid.*, p. 22: '... illa mystica monadum monas, unitas unitatum... Deus deorum... tonum illum sacrosanctum mysticum ineffabilem, et originalem intonans mundo, cujus pulsatione, actu et afflatu unisono ac uniformi mundus et creaturae ejusdem variorum formarum concordantiis, quibus existant et vivant, imbuuntur... Haec, inquam, unitas est pulsator Monochordii et ipsa forma ac anima totius harmoniae macrocosmicae et microcosmicae...'

⁴⁶ *Ibid.*, p. 25.

⁴⁷ *Ibid.*, p. 25: 'Secundum horum igitur

divinorum numerorum in unitate semper contentorum progressum, dualitatis materialis, seu spiritualis, seu aquae seu naturae humidae ordo, harmonia, proportio, mensura seu intervalla disponuntur: hinc enim universi mundi in tres regiones divisio, quarum secunda a prima et tertia ab utraque essentias acceperunt suas: hinc tres harmoniae cujusque symphoniae, Diapason, Diapente, et Diatessaron, quarum Diapente a Diapason quasi unitate et Diatessaron ab ambabus: hinc rerum omnium et ipsius mundi proportionum duplae, sesquialterae et sesquiterciae a varia lucis divinae in spiritus universalis in hyla dispositione derivatae...'

⁴⁸ *Ibid.*, pp. 41-2: 'Ex simplici igitur numerorum divinae Trinitatis harmonia, Musica illa tam mundana quam humana exorta est.'

⁴⁹ *Ibid.*, p. 59: 'Unde luculenter apparet, quod, utcumque personae Trinitatis accipiantur, semper in concordia et symphonia reperiantur, atque ab omni discordia et contrarietate immunes esse observentur.'

the octave, i.e. they end in the octave which itself consists of seven intervals.⁵⁰ The uncreated divine harmony is united with the created harmony by the insoluble tie of the perfect octave. The ternary of the formal trinity, when connected with the material quaternary produces the septenary, i.e. the number which produces the octave. Thus the octave is the tie by which God linked the music of His life and light to that of His creatures.⁵¹ By virtue of the peculiar proportion of the octave, God descends from His eternal throne into the ambit of the material world and thereby forms and compounds all things.⁵² The downward descent of the divine mind into the human body in particular goes via the octave. Various aspects of this descent are described. It is considered as mirrored in the intervals of the double octave of the monochord of the world as explained in *De Musica mundana*. In another version Fludd co-ordinates one octave to each of the three regions of the world, namely the angels, the planets and the elements, so that altogether there are here three octaves and not only two (Pl. 25a). This version describes how *mens*, together with three companions—namely *lux intellectualis*, *vitalis*, *et sensitiva*—tends downwards and reaches the earth to be incarcerated there in a dark prison, by virtue of the material fourth.⁵³ Yet another version shows how the harmony of the world and of man is derived from the *septenarius* (Pl. 25b). The active part of the soul is here conceived as an image of the divine ternary, the Trinity. Conjoined to the passive part of the soul, which is a quaternary, it produces the septenary which is the whole of the human soul. By means of a triple harmony, i.e. by the three octaves of the universe, the soul is enabled to descend into its bodily habitat.⁵⁴ The divine mind during its descent down the hierarchies carries along with it part of the nature of each hierarchy into the human body, so that man becomes participant of all their different qualities. Thus the microcosm becomes the image of the macrocosm and *musica humana* is made to correspond with *musica mundana*. This explains the strong effect of artificial music on man. Listening to it, he

⁵⁰ *Ibid.*, p. 46: '*Numerus etiam perfectionis nuncupatur, quia ultra consonantiam Diapason (quae ex septem constat intervallis) non est transitus simplicium in harmonia.*'

⁵¹ *Ibid.*, p. 61: '*At vero illa symphonia increata unitur nexu indissolubili harmoniae creatae; videlicet forma supersubstantialis, materiali et substantiali hac via, scilicet ternario numero trinitatis (qui diapason in se continet) addito ad quaternarium numerum materiae . . . producitur septenarius numerus, qui consonantiam totius perfectionis progignit, videlicet diapason, quae est illa copula, per quam Deus et adligavit suis creaturis musicam vitae et lucis cosmo ac cosmi filii assidue eam infundit atque liberaliter.*'

⁵² *Ibid.*, p. 46: '*. . . cujus [Diapason] virtute et proportionem Deus ex suo solio immortalis simpliciterque formali in orbem*

universum mundi materialis res informando et componendo descendit.'

⁵³ *Ibid.*, p. 91: '*Atque ita mens cum tribus suis satrapis, luce videlicet intellectuali, vitali et sensitiva seu elementari in triplici suo curriculo deorsum tendit, ad terram pervenit, et in suum carcerem tenebrosam virtute Diatessaron elementaris seu corporalis includitur.*'

⁵⁴ *Ibid.*, p. 92: '*Cum vero activa animae portio iconem Trinitatis prae se ferat, quatenus verbum dicitur esse in mente et mens in intellectu agente, idcirco numerum formalem seu proprietatem divinitatis, hoc est, ternarium divinum sibi vendicat; qui additus numero suae portionis passivae, quaternio scilicet, producit numerum septenarium, ex quo componitur anima humana; per cuius harmoniam triplicem deorsum in corporeum suum diversorium vehitur.*'

remembers the divine harmony which his *mens* once heard in Heaven—a perfect exemplification of the Platonist notion of anamnesis.⁵⁵

The miracle of man consists in the amazingly harmonious conjunction of the opposites of mind and body.⁵⁶ Fludd represents this harmony of *homo internus* and *homo externus* by transferring the theory of the pyramids from the macrocosm to the microcosm (Pl. 27a, b). It is in particular the double octave which distinguishes man from the animal. In the material octave the soul is involved in evil and in the temptations of the flesh, but through the spiritual one it may rise to Heaven.⁵⁷

A beautiful engraving sums up Fludd's conception of *musica humana* (Pl. 26b). His commentary runs as follows:

In this picture we see the miraculous harmony in which the two extremes, the most valuable and the meanest, are chained together and are in harmony; we see how the intermediary world spirit, the vehicle of the soul, is the tie which links the two extremes in joyful harmony and we see how God is the player of *musica humana*, the player of the string of the monochord, the inner principle which, from the centre of the whole, creates the consonant effects of life in the microcosm. The string which by its vibration spreads the luminous effects of the Inspirer through macrocosm and microcosm as accents and sounds of love, as it were, is the luminous spirit which participates in the two extremes and which joins them together. This string equally denotes the system of notation, or staff, in man by which the soul descends from the higher spheres and reascends towards them after death, when the ties of the body, the meanest of all places, have been dissolved.⁵⁸

⁵⁵ *Ibid.*, p. 94: 'Ut anima humana per harmoniam mundanam in obscurum suum habitaculum immigravit, sic etiam hominem mundanum incolens, non modo retinet secum actum symphoniae mundanae, sed etiam concordiae divinae ideam secum rapit; Unde fit ut sonis Musicae vulgaris mirum in modum afficiatur. Hinc est quod *Jamblichus* hujusmodi sermones jactavit: "Anima", inquit ille, "in mundo intelligibile audivit harmoniam divinam, cujus hic reminiscitur, quando audit melodiae divinae vestigium; reminiscens vero ab eam vehementer afficitur, si est in numero animarum, quae ipsam harmoniae ideam praecipue contemplatae sunt in patria. Ejusmodi vero affectu facta familiaris Deo jam afficitur singulari quadam praesentia Dei, unde mirabilia facit." Hujus ergo afflatus miraculique causa non est passio ex sonis illata, non animae natura ex harmonia composita, sed similitudo ad Deum, Deique praesentia. Sunt igitur imprimis vestigia Musicae et melodiae divinae in mente, cujus pulsatione suavi ad summum allicimur bonum, et contemplationem rerum divinarum.'

⁵⁶ *Ibid.*, p. 247: '... si animae trinitas, quae idem est essentia cum unitate, addatur materiae quaternitati, tum ea producit numerum septenarium, in quo consonantia perfectissima sonare animadvertitur, quae Diapente et Diatessaron in se continet; et per consequens haec animae cum corpore unio reddit jam illud miro modo consonans, quod antea fuit dissonans . . . Unde invenimus, quod homo nihil aliud sit, quam unitas et multitudo admirabili harmonia simul collecta.' See also *ibid.*, p. 126.

⁵⁷ *Ibid.*, pp. 242–3: 'Ex hisce igitur patet, qualis sit differentia inter hominem et brutum; videlicet quod homo habeat in se Disdiapason, cujus pars altera elevatur ad res supercoelestes contemplandas, altera vero in materia submergitur et cum rebus materialibus tam opacis quam perspicuis conservatur. In Diapason ergo materiali versatur anima circa mala, circa carnis illecebras et circa res mundanas; Atque harmonia sua spirituali ad coelestia se erigit.'

⁵⁸ *Ibid.*, pp. 274–5: 'Ex hisce igitur oculis quasi apertis contueri possumus admirabilem illam harmoniam, qua duo illa extrema,

The controversy with Kepler

Many contemporaries of Fludd attacked his philosophy. Feeling obliged to defend himself, he published several polemic writings. Johannes Kepler, in an appendix to his main work *Harmonice mundi*, published in 1619, answered the question which had been put to him in what respects his work agreed with Fludd's. Fludd understood Kepler's statement of his opinion not as a mere comparison, as Kepler later pretended it to be, but as an open attack and an attempt to refute his theories.⁵⁹ Kepler's appendix, therefore, became the beginning of a protracted controversy between the two scholars. Fludd, in 1621, published the treatise *Veritatis proscenium*⁶⁰ to defend his views; Kepler replied in 1622 with an *Apologia*, and in the course of the same year Fludd hit back with his treatise *Monochordum mundi*.⁶¹

To understand the two treatises of Fludd one has to call to mind some points from Kepler's *Harmonice mundi*, in particular the contents of its appendix. The *Harmonice mundi* is the crowning achievement of Kepler's lifelong research on the orbits of the planets. He is indeed best known as the discoverer of his planetary laws. Only the recent research of Thimus and Kayser and the biography and edition of Kepler's writings by Max Caspar have shown his belief in an all-embracing divine harmony of the world and his fanatic desire to prove it to be at the very centre of his thought.⁶²

The core of Kepler's system is the notion of archetypal harmonies based on the significance of a few numerical proportions.⁶³ These archetypal harmonies are found in divisions of the circle resulting from the construction of inscribed regular polygons.⁶⁴ According to Kepler, the archetypal circle containing these harmonies symbolizes the soul. Thus the discovery of a harmonic proportion in the world of the senses led to the assumption of a similarity of proportions in that world with the archetypal harmony established in the human soul by the Creator.⁶⁵ If one imagines the circumference of a circle as extended in a straight line like a string and transfers the above-mentioned polygonic divisions of the circle to that line one gets the seven

pretiosissimum scilicet et vilissimum ad invicem concatenantur, et sibi invicem consonant, et quod spiritus mundi intermedius, animae vehiculum, sit nexus retinendi ipsa in concordi pace atque symphonia, et quod Deus sit musicae humanae sufflator, seu chordae monochordii pulsator, seu principium internum, a centro quasi totius consonantes motus et vitae effectus in Microcosmo producens. Chorda vero sua vibratione lucidos inspiratoris effectus, tanquam amoris accentus et sonos, per Macrocosmum et Microcosmum dispergens, est spiritus limpidus qui naturaliter secundum suum situm et positionem participat de utroque extremo, et utrumque extremum ad invicem connectit, similiterque systematis humani gradus seu claves delineat, quibus deorsum a superis in corpus fit descensus animae, et e converso quoque ejus ascensus ad superiora seu locum nobilissimum, post corporis interi-

tum et vinculum vitae a corpore, loco nempe vilissimo, dissolutionem.'

⁵⁹ Fludd, *Anatomiae Amphitheatrum*, Frankfurt 1623, pp. 291f.

⁶⁰ The *Veritatis proscenium* was published as an appendix to the *Utriusque mundi . . . historia*, ii, Tract. ii, portiones I, II, Frankfurt 1621.

⁶¹ Frankfurt 1622; a second edition appeared in 1623 as an appendix to the *Anatomiae Amphitheatrum*, from which my quotations are taken.

⁶² See Rudolf Haase's article on Kepler in *Die Musik in Geschichte und Gegenwart*, vii, cols. 839-44.

⁶³ J. Kepler, *Weltharmonik*, translated and introduced by M. Caspar, Munich-Berlin 1939, p. 36*.

⁶⁴ *Ibid.*, p. 21*.

⁶⁵ M. Caspar, *Johannes Kepler*, Stuttgart 1950, pp. 318-19.

elementary harmonic proportions, 1:2 for the octave, 2:3 for the fifth, 3:4 for the fourth, 4:5 for the major third, 5:6 for the minor third, 3:5 for the major sixth, 5:8 for the minor sixth. Thus Kepler thought he had found the cause of musical harmonies in the archetypal forms of geometry.⁶⁶

In the fifth book of *Harmonice mundi*, Kepler deals with the principal subject of his research, the planetary orbits, and explains his famous third planetary law. Still, this law itself was not Kepler's main concern, but, as he says, he wanted to prove above all that all harmonies exist in the heavens in their true quantitative and measurable proportions, not just as an unverifiable symbolism. He proposed to prove that in the heavens there are the different keys, the scales and indeed all component parts of music, including the counterpoints of the six planets.⁶⁷

Discussing Fludd's *De Musica mundana* in his appendix,⁶⁸ Kepler states that the difference between him and Fludd is enormous. The harmonies which Fludd taught are to him mere imagery. Whereas Fludd's music of the world was related to the whole universe with its three regions of angels, planets and elements, his own concept is exclusively concerned with the planetary movements. Fludd might posit the parts between which he wanted to establish a consonance arbitrarily in any way he liked without enquiring into the real nature of the number units. 'But I', Kepler says, 'never teach how to find harmonies if the objects between which they are supposed to exist, cannot be measured by one and the same measure.' Thus Fludd would divide the world into three equal parts, knowing well that these parts are not equal. In developing musical proportions from the conjunction of the two pyramids, Fludd had done something completely divergent from his, Kepler's intentions. Fludd would compare light and matter, things wholly incommensurable since no common measure could be applied to both. 'Yet I', Kepler continues, 'use natural units, namely the two extreme movements of the planets . . . , and in these I look for harmonies. Fludd is looking for harmonic proportions in the degrees of darkness and light, without consideration of any movement, whereas I am looking for harmonies only in movements. He picks out some unimportant consonances and develops them from the interpenetration of his pyramids, which he carries in his head as a fictitious world of his own . . . To him the subject of universal harmony is the picture which he himself fashions out of the universe; to me it is the universe itself, or the real planetary movements.'

Veritatis proscenium

Fludd's first answer to Kepler is contained in the treatise *Veritatis proscenium*. Kepler had claimed that he was investigating the causes of natural things by means of mathematical arguments. Now to Fludd's mind there is an essential distinction between things natural and things mathematical, which make the two incommensurable, a view which in the last resort results from his Aristotelian concept of the physical world.⁶⁹ Fludd alleges that

⁶⁶ J. Kepler, *Weltharmonik*, p. 21*.

⁶⁷ J. Kepler, *Harmonice mundi*, *Gesammelte Werke*, ed. M. Caspar, vi, Munich 1940, p. 372.

⁶⁸ *Ibid.*, pp. 373f.

⁶⁹ E. Cassirer, *Das Erkenntnisproblem in der Philosophie und Wissenschaft der neueren Zeit*, 2nd ed., i, Berlin 1911, pp. 343ff.

mathematics treats with things abstractly, whereas physics does so in a concrete way.⁷⁰ He, of course, prefers physics. The science of music, he says, is more a matter of physics than of mathematics, because its inner and essential significance resides in the separation of the more spiritual from the more material substances.⁷¹ Therefore Fludd regrets as a great error that music was reckoned among the mathematical arts. The philosophers adumbrate divine music by the shadows of geometry and arithmetic; the inner essence of music, however, still remains unknown. It is essentially the same in man, in the world, in the elements, in the planets, and finally in the archetypal world which is the origin of harmony.⁷²

Kepler rejects the mystique of numbers because those numbers are abstract and of no use in mathematical arguments, whereas Fludd calls the numbers of vulgar mathematics abstract, because they only measure the accidental quantities of things which are close to the senses, but which in reality are mere shadows.⁷³ To Kepler the traditional symbolism of numbers from which Fludd derived the harmonic proportions of the world is meaningless, in particular the symbolic representation of the totality of light or matter by the number four and the disposition of the world in three tiers seems to him completely pointless. Whereas Kepler denounces as arbitrary the way in which Fludd established his harmonies, without at all caring about physical phenomena, Fludd criticizes Kepler for examining the pyramids in *De Musica mundana* from a mathematical point of view. 'Who does not know the mathematical proportions of the pyramid?'⁷⁴ Fludd exclaims, and goes on to say that his pyramids are not to be understood from a mathematical, but from a formal point of view. The object is not an ascent by mathematical quantities from one place to another, but an ascent from imperfection to perfection, from impurity to purity, from the depth to the summit, from crudeness to full maturity, from darkness to light, from earth to heaven, from evil to good, in fact from the devil to God.⁷⁵ This is, according to Fludd, the secret and essential object of music. He evidently sees music in the same light as alchemy.

⁷⁰ Fludd, *Veritatis proscenium*, p. 10.

⁷¹ *Ibid.*, p. 10: 'Imo vero totius Musicae sonorae ratio, atque etjam ipsorum intervallorum ortus magis ad Physin spectat ratione naturae suae occultae, quam ad Mathesin, si internum ejusdem principium recte inspiciamus: quoniam arcanum ejusdem consistit in physica materiae spiritualis sive grossioris sive tenuioris divisione, cujus divisor est anima actus canentis vel pulsantis, sive sit in Micro: sive denique in Macrocosmo.'

⁷² *Ibid.*, p. 10: 'Sed quoniam nimis profundum foret ac arduum captui ignorantium hoc excogitare, ideo verae Physicae substantiae naturam et motum ratione Mathematica (quoniam hujusmodi demonstratio est sensui magis familiaris) explicare atque aperire solebant Sapientes, tangendo hoc modo umbris Geometricis et Arithmeticiis Musicae divinae medullam; quibus tantus

jam in artem Musicae irrepsit error, ut eam e ventre et visceribus Naturae extrahendo inter artes liberales Mathematicas collocaverint. Atque hac via vanam concipimus umbram, seu Musices respicimus tunicam seu corticem; interiorum vero ejus essentiam seu nucleum ignoramus: Quae quidem nihilominus eadem est in homine quae in mundo, eadem in elementis quae in Planetis, ac eadem tandem in illis, quae in ipso mundo Archetypo, unde originaliter orta est Harmonia machinae totius.'

⁷³ *Ibid.*, p. 26.

⁷⁴ *Ibid.*, p. 29.

⁷⁵ *Ibid.*, p. 29: 'Dicimus igitur quod pyramidalis nostra contemplatio magis sit formalis, quam ut sub consideratione mathematica comprehendi possit, quoniam denotat progressionem occultam formae in materia ad depurationem, subtiliationem, et

Whereas Kepler admits only things which can be proved by quantitative mathematical investigation, Fludd claims physical as well as psychic, moral as well as aesthetical categories to be legitimate means of man's enquiry into the harmony of Nature. In contrast to Kepler's geometrical harmony, Fludd defines natural harmony as the result of the conjunction of the active and the passive principles, namely of light and of matter. But the spiritual or formal principle, as he states, is immeasurable and cannot be expressed by geometrical lines.⁷⁶ Kepler, according to Fludd, deals only with the material half of the two pyramids.⁷⁷ 'That is the whole trouble', he exclaims, 'Kepler is concerned with the external movements of things, but I with the internal and essential processes of Nature.'⁷⁸ Kepler writes: 'It is obvious that he [Fludd] derives his main pleasure from unintelligible charades about the real world whereas my purpose is, on the contrary, to draw the obscure facts of Nature into the bright light of knowledge. His method is the business of alchemists, hermetists and Paracelsians; mine is the task of the mathematician.' And Fludd answers: 'The ordinary mathematicians deal with the shadows of quantities, the chemists and hermetist, however, grasp the true essence of natural things.'⁷⁹

Monochordum mundi

In his *Apologia* Kepler elaborates the opinions already expressed in his appendix and Fludd in his second reply does not really take issue with Kepler's arguments, but for the most part merely explains and clarifies his views. In the beginning of his second reply, the *Monochordum mundi*, Fludd confesses that he uses the concept of harmony in its widest sense. As there is but one *anima mundi*, so the same music is in all things.⁸⁰ He understands harmony in the same way as the Psalmist, as the song of praise addressed by

conductionem ipsius ad maturitatem et perfectionem ab imperfectione, et a crasso ac denso ad tenue: Atque in hoc quidem jacet omnis mystica harmoniae proportionum, et mensurarum Sapientum intentio . . . Videre igitur licet, quod, ut pyramis materialis, quo magis sursum tendit, eo est in sua forma potentior . . . sic etiam ipse mundus et omnia in mundo eo magis forma exuberant, quo magis ad puritatem et subtilitatem ab impuritate et grossitie moventur; atque ita semper ascendunt non quidem mensuris mathematicis ab imo sursum, hoc est, a loco ad locum, sed ab imperfectione ad perfectionem, ab impuro ad puritatem, a gradu humilis ad statum exaltatum, a cruditate ad completam maturitatem, a tenebris ad lucem, a terra ad coelum, a malo ad bonum, a Diabolo denique ad Deum.'

⁷⁶ *Ibid.*, p. 15: ' . . . Naturalis [Harmonia], quae fit inter actiones benevolas et passiones optime dispositas animae mundanae cum ejus substantia materiali; ita ut nunquam fuerit intentio Philosophorum, quod harmo-

nia naturalis consistat in dimensionibus Geometricis; quippe quod anima agens mensuram non patitur visibilem.'

⁷⁷ *Ibid.*, p. 33.

⁷⁸ *Ibid.*, p. 36: 'Sed hic tota latet difficultas, quod ipse [Kepler] motus rei naturatae exteriores excogitat, ego actus internos et essentielles ab ipsa natura profluentes considero . . .'

⁷⁹ *Ibid.*, p. 12: 'Nam mathematicorum vulgarium est circa umbras quantitativas versari; Chymici et Hermetici veram corporum naturalium medullam amplectuntur.' For Kepler see his *Harmonice mundi*, Appendix, *Gesammelte Werke*, ed. M. Caspar, vi, Munich 1940, p. 374.

⁸⁰ Fludd, *Monochordum mundi*, p. 295: 'Quod Robertus voce Harmonia utatur sensu (ut ait [Kepler]) latissimo, non erubesco, cum unicum agnoscam mundi animam ubique expansam . . .' *Ibid.*, p. 296: 'Eandem Musicam revera in omnibus dico, ut eadem Anima mundi . . .'

all creatures to their Creator. Of course, there is harmony in the planets, but also everywhere else, though not such obvious harmony.⁸¹ Fludd, unlike Kepler, refuses to conceive of a harmony limited to only one part of the world seen as separated from its Creator.⁸² For this reason he remains unable to get away from his symbolical images expressing the harmony of the whole world, such as the *aurea catena*⁸³ and his favourite image of the *monochordum mundi*.

The tone of Fludd's second reply to Kepler is on the whole more tolerant than that of his *Veritatis proscenium*. Without varying his view of essentials, he is now prepared to pay tribute to Kepler as an eminent mathematician.⁸⁴ Referring to the quarrel about the units of measuring, Fludd says that he had already shown in his *Veritatis proscenium* how Kepler did not understand the 'physical' sense of his harmony, and yet it seems that Fludd somehow felt hit by Kepler's severe criticism. He declares it to be one of the main purposes of his treatise *Monochordum mundi* to prove that his monochord of the world satisfies also the requirements of external mathematics.⁸⁵

Fludd does not want to criticize any details of Kepler's *Harmonice mundi*, but only proposes to state his general opinions on the basis of Kepler's enquiry into the nature of harmony.⁸⁶ He means the theory of the circle of the soul.⁸⁷ To Fludd a refutation of Kepler's axioms follows from the indivisibility of God. God is like the most perfect interval, the octave: proceeding from its own nature it returns to it and still remains the same. From the indivisibility of God derives the one of His image, the soul.⁸⁸ Thus the soul can neither be part of Nature, nor be divided or composed of numbers or quantities, and consequently it cannot contain the circle with its divisions as Kepler alleges.⁸⁹

Before dealing with his own harmony of the universe, Fludd explains the harmony of universe and soul according to Plato's *Timaeus*. Plato's heptachord consists of two series, each of three numbers, proceeding from the unity. The ternary numbers 3, 9, 27, are the numbers of the soul, the light, and the active principle. The binary numbers 2, 4, 8, represent matter, darkness, and the passive principle.⁹⁰ Fludd also describes how, later, Proclus, in order to

⁸¹ *Ibid.*, p. 329: 'Porro etiam in virtute huiusce cantus iuxta Psalmistae regij opinionem, coeli stellae, aquae, pluviae, nimbi sonantes, nives, tonitrua, venti et omnes creaturae Deum creatorem laudare, et voce altissima honores ei resonare dicuntur. Imo vero, ipsis dico stellis et Planetis inesse huiusmodi cantus formulam, sed non aliter quidem quam in caeteris creaturis utcunque minimis, licet nobis propter subiecti exiguitatem non ita clare elucescat haec virtus harmonica.'

⁸² *Ibid.*, p. 311: 'Haec, inquam, est vera mundi Harmonia, et qui ultra hanc curiosius per se sine influxu divino explorare gestiunt, fallunt et falluntur, quia particulariter de Deo eiusque operibus hocque directe disceptare immensum, impossibile et imper-scrutabile foret negotium.'

⁸³ See *ibid.*, p. 305.

⁸⁴ See *ibid.*, pp. 292, 296, 301, 306, 330.

⁸⁵ *Ibid.*, p. 292.

⁸⁶ *Ibid.*, pp. 297-327.

⁸⁷ See above, pp. 210-11.

⁸⁸ *Ibid.*, p. 306: 'Ubi autem videris asserere, quod divisio illa et Harmoniae intervalla essent in mundo archetypico ab origini, et abinde in animam humanam esse infusa, dico ego quod nulla fiat divisio in essentia divina, utpote quae est indivisibilis, nec circuli aut figurae impressiones (nisi metaphorice loquendo) potens sit recipere. Est enim instar Diapason perfectissimae et completissimae consonantiae, quae oriens a sua propria virtute in illam iterum redit, et hoc unum manet, atque itidem se habet anima...'

⁸⁹ *Ibid.*, pp. 299f.

⁹⁰ *Ibid.*, p. 308.

fill in the interval between the numbers 1 and 2 without using fractions, replaced the unity, 1, in Plato's heptachord by the number 384, and thus succeeded in filling in all the intervals by means of unfractioned numbers.⁹¹ Fludd then compares this Platonic, or neo-Platonic, harmony with his own so as to show that:

(1) The proportions of that harmony coincide perfectly with his own, with the sole difference that Plato's is expressed by arithmetical numbers and his geometrically by means of circles on a plane surface.

(2) That his and Plato's harmonies can be perfectly applied to the structure of the world; thus proving to his readers that his harmony of the world requires the support of mathematical proportions no less than Kepler's.⁹²

At this juncture Fludd presents a new pictorial conception of his *monochordum mundi* (Pl. 27c) which does not occur in his earlier writings. The cognition of God, according to Fludd, may be considered either as a descent from the periphery towards the centre or as an ascent from the centre towards the periphery. For the benefit of common reason Fludd had represented this process in *De Musica mundana a posteriori*, or as a scale ascending from the centre of the earth, the deepest note, to God residing in the periphery; but now, in the new version, he proceeds conversely, *a priori* and *more mystico*, descending from God, the centre, towards the periphery of the multiplicity of phenomena. God's emanation begins at a point marked by the basis note C. The octaves c, cc, ccc, etc., issue successively from this point.⁹³ Every successive octave is half the length of the proceeding one, which Fludd interprets as signifying that matter is more condensed in each consecutive region into which the octaves extend and that, therefore, it will occupy less space.⁹⁴ In lengthy speculations the mystery of the Trinity is then explained as symbolized by the divisions, in particular by the octaves, of the monochord.⁹⁵ The difference between the older monochord and the new one is highly significant. The first monochord (Pl. 23b) has been divided into two octaves, and each of these, extending from the extreme ends of the string towards the centre, had been subdivided into a fourth and a fifth. Inconsistently, the string had been further divided into wholly arbitrary geometrical proportions, on a continuous scale ascending from the bottom to the top of the instrument. By contrast the new version of the monochord (Pl. 27c) is quite consistent in so far as it is with geometrical precision divided into the aforementioned series of octaves of which each is half the length of the preceding one. By introducing this correct division Fludd recognized and corrected his former oversight and indeed made a concession to Kepler and his 'external mathematics'. Except for this concession, Fludd's intention remains unchanged: The new model of the monochord serves to illustrate the same fundamental tenets as the old one, though here a more comprehensive synopsis of the Fluddian syncretism of Christianity, Neoplatonism, and the Cabbala is presented. The divisions of the string are seen in the centre of the instrument. On the left side Fludd has correlated the tones and semitones with the numbers of Plato's heptachord 1, 2, 3, 4, 8, 9, 27, and with Proclus's division starting from the number 384.

⁹¹ *Ibid.*, pp. 312-15.

⁹² *Ibid.*, p. 315.

⁹³ *Ibid.*, p. 317.

⁹⁴ *Ibid.*, p. 320.

⁹⁵ *Ibid.*, pp. 317ff.

On the right, Fludd has placed the spheres of the elements, of the planets, and of the angels in a way similar to the first version. Adjoining on the right are the series of octaves: the first octave which denotes the emanation of God on the first day of Creation, is correlated with God the Father in the Holy Trinity; in the three regions of the world it corresponds to the angels; with regard to the Tetragrammaton to the Hebrew letter He; with regard to man, to *mens*; and with regard to the tabernacle of Moses, to the *Sanctum Sanctorum*. The second octave refers to the second day of Creation, to God the Son, to the region of the planets, to the Hebrew letter Vau, to the *spiritus vitalis* of man, and to the seven candlesticks of the tabernacle. The third octave refers to the third day of Creation, to the Holy Spirit, to the region of the elements, to the second Hebrew letter He, to the body of man, and to the third commonly accessible part of the tabernacle of Moses. The further octaves, which become shorter and shorter, are co-ordinated to man, the animals, the plants, and to the minerals.⁹⁶

The controversy with Mersenne

In 1626, a friend informed Fludd by letter that Marin Mersenne had directed a sharp attack against him in a book entitled *Quaestiones in Genesim* which had appeared in 1623.⁹⁷ Fludd replied in no less violent expressions in *Sophiae cum moria certamen*. Mersenne, spurred by his *confrère*, the Père de la Noue (Lanovius), asked his friend, Pierre Gassendi, to undertake his defence in *Petri Gassendi theologi epistolica exercitatio, in quo principia philosophiae Roberti Fluddi reteguntur . . .* which book appeared in 1630.⁹⁸ Fludd in turn replied to Gassendi, Mersenne, and Lanovius in his *Clavius Philosophiae et Alchymiae Fluddanae*.⁹⁹

Mersenne's attack is chiefly directed against the renaissance notion of 'panpsychism',¹⁰⁰ in particular against Fludd's pantheistic doctrine of the Creation and against his demonology. The theory of music is only part of this controversy. Fludd's *Sophiae cum moria certamen* introduces no new arguments concerning his musical theory, but expounds more clearly than he had ever done previously how inextricably his ideas on music and harmony are woven into his philosophy; indeed he makes the reader realize that they are essential components of that structure. A whole chapter is devoted to the defence of his *musica mundana*.¹⁰¹

Mersenne had contemptuously passed over Fludd's doctrine of the divine origin of harmony and his theory of the interpenetrating pyramids, alleging that these were devoid of any reason. He had joined Kepler in qualifying Fludd's *musica mundana* as mere poetry and oratorical imagery and had even expressed astonishment at the forbearance with which Kepler in his *Apologia* had treated Fludd. Fludd, in turn, gives to understand in *Sophiae cum moria certamen* that he regards Kepler as an adversary whom he respects and as a most

⁹⁶ *Ibid.*, pp. 321-2.

⁹⁷ Fludd, *Sophiae cum moria certamen*, (published as an appendix to his *Medicina Catholica*, Tract. i), Frankfurt 1629, pp. 8-9.

⁹⁸ The same book entitled *Examen Philosophiae Roberti Fluddi* was again published in

Gassendi, *Opera omnia*, iii, Lyons 1658.

⁹⁹ Frankfurt 1633.

¹⁰⁰ R. Lenoble, *Mersenne ou la Naissance du Mécanisme*, Paris 1943, pp. 27, 29.

¹⁰¹ Fludd, *Sophiae cum moria certamen*, pp. 23-30.

able mathematician. But he returns Mersenne's insults in equally insulting language.

The second book of *Sophiae cum moria certamen* defends Fludd's tenet of a world soul.¹⁰² The *anima mundi* is in his opinion the *praecipuum agens* establishing the harmony of the universe. Without its inspiration, there would be no consonances in the *harmonia mundana*; there would be neither any tones nor any coherent tonality in the world.¹⁰³

Another chapter defends his doctrine of *musica humana*.¹⁰⁴ Mersenne had made game of that doctrine. Fludd, in his reply to Mersenne, concentrates on the relevance of the divisions of his monochord which, he affirms, gives access to the understanding of such infinite mysteries as the following: Why the sun is the heart of the heavens; why all life of the creatures resides at their centre; why God, Whose periphery is nowhere, is called the centre of every thing; why virtue exists in the centre; how *sapientia* was created before any other thing; why the *spiritus Dei* residing in all things is indestructible; how life is derived from the Word, in which alone life is present that has been emitted through the consonance of the first and highest perfection (i.e. through the emanation of the octave), and how by the fifth, contained in that most perfect consonance (i.e. the octave), the gifts of the quintessence flow downwards as rays of life, and how, by the fourth, the forces of the elements flow downwards, the first mainly going towards the internal soul and the latter towards its externals (i.e. the body).¹⁰⁵ Fludd then enumerates the various nomenclatures used to designate one and the same thing which is the ultimate aim of all wise men. It is the One; it is the *Summum Bonum* of the philosophers; it is the *Aleph lucidum* of the cabbalists; it is the Word, the Wisdom, and the Christ of the theologians; it is truly the philosophers' stone of those alchemists who are learned and wise; and it is that vital music, that consonance of the octave, which is the appanage of all genuinely formal musicians.¹⁰⁶ The Word, alias the Wisdom, alias Jesus Christ, alias the

¹⁰² *Ibid.*, pp. 41ff.

¹⁰³ *Ibid.*, p. 41: '... mundi animam (quam Mersennus negat esse in rerum natura) praecipuum nostrum in harmonia nostra mundana agens fecimus, quo ablato necesse erit, ut consonantiae harmoniae nostrae mundanae penitus auferantur, et consequenter, quod tota harmonia, seu musica mundana tam tonis quam symphonia careat.'

¹⁰⁴ *Ibid.*, pp. 100-7.

¹⁰⁵ *Ibid.*, p. 103: 'Infinita quidem mysteria ex istiusmodi consideratione sunt elicienda vid cur Sol sit coeli cor et cur omnis creaturae vita sit in eius centro seu meditullio sita, et cur Deus dictus sit cuiuslibet rei centrum cuius circumferentia est nullibi, et cur virtus in medio consistat, et quomodo Sapientia sit ante omnia creata, et quomodo Spiritus Dei incorruptibilis sit in omni re, et quomodo vita sit a verbo, in quo solo vita adest per consonantiam primae et summae perfectionis

emissa: et quomodo per Diapente, in illa consonantia perfectissima contenta, dotes quintae essentiae deorsum impluuntur, videlicet vitae radij, atque per Diatessaron elementorum vires, quarum illae praecipue ad animam internam, hae et eius externum conducunt...'

¹⁰⁶ *Ibid.*, p. 104: 'Imo vero ex dictis ac scriptis suis certus sum, ipsum [Mersenne] longe abesse a vera Platonis et caeterorum Philosophorum verorum intentione, quae apud Sapientes non est nisi unica, sive more Cabalistico sive Philosophico et Magico sive Chymico, seu denique theosophico exprimitur, atque hoc est summum illud bonum Philosophorum, Aleph lucidum Cabalistarum: verbum et Sapientia et Christus Theologorum... et lapis verus Philosophicus a doctis et Sapientibus Alchemistis, et musica illa vitae consonantia diapason, verorum et formalium et non spuriorum musicorum...'

Tetragrammaton, are the source of all harmony in both macrocosm and microcosm.¹⁰⁷

Mersenne's attack had been specially directed against the idea that any such emanations form the basis of harmony. He did not agree that David, playing the lyre, had set into motion any heavenly spheres, intelligences, or divine agencies as Fludd had asserted. He held that Fludd thereby confused the angels with genii and implicated these unlawfully in the music of the universe and of man, thus plunging music into floods of obscurity. Retorting, Fludd adduces Iamblichus who had said that music reminds the soul of the harmonies it had once heard in its divine fatherland. Like was attracted to like, as evidenced by the magnet attracting iron by virtue of the admirable harmony of love, and so, likewise, all things in this inferior world attracted the influence of their heavenly forms by a wonderful symphonic love. Why then should not the harmony of the heavens be made to respond that which is its like on earth? If the evil and antipathetic mind of Saul was rendered benevolent by David's lyre, why should not the good spirits of Heaven be moved who, by natural instinct, enjoy harmony and concord?¹⁰⁸

In his *Examen Philosophiae Roberti Fluddi*, Gassendi joins Mersenne in his defence of rationalist theology and science. But he criticizes discreetly the violent tone of his friend's attack against Fludd and uses much more moderate language than Mersenne, as Fludd himself acknowledged.¹⁰⁹ Gassendi gives a fair resumé of Fludd's theory of music.¹¹⁰ He draws Mersenne's attention to the fact that Fludd's image of the monochord was never meant to be taken as a statement of quantitative or spatial measurements.¹¹¹ He lays bare the arbitrary and defective character of Fludd's musical analogies while admitting that Fludd had never intended to claim mathematical accuracy for the proportions of his alchemical device. Any transfer of the notions of scientific measurement to the domain of such mystical speculations would deprive them of their meaning and render them utterly ridiculous.¹¹²

Fludd, who had the last word in this controversy, states in his *Clavis Philosophiae et Alchymiae Fluddanae* that he was satisfied with the invention and with the use of his monochord, for it allowed him to compose forty different parts over one bass and to play or sing anyone of them. And although certain ill-informed common musicians believed that he was not concerned with the practice of music, but only with the speculative theory,

¹⁰⁷ *Ibid.*, p. 105: 'Concludimus igitur totam in utroque mundo Harmoniam a verbo, a Sapientia, a Christo Iesu, a virtute Tetragrammati provenire . . .'

¹⁰⁸ *Ibid.*, p. 106: ' . . . Iamblicus agnoscit, ideo animam ad sonum musices esse raptum, quoniam videtur reminisci se similes proportionem in patria sua, unde est derivata, audivisse. Nonne naturali inclinatione simile sibi simili gaudet et delectatur? Sic magnetem ferrum admirabili amoris Harmonia attrahere videmus. Atque etiam cognoverunt Sapientes experientia docti, quod similia in inferioribus similes ad se influxus a superiori-

bus appetitu symphonico, et amore admirando attrahant et aliciant. Cur ergo non moveatur coeli concordia suo simili in terra . . .? Porro etiam si Spiritus malus et antipatheticus in Saul ad Citharae Davidis sonos complacabatur, cur non moverentur Spiritus in coelo boni, qui naturali instinctu in concordia et Harmonia delectantur?'

¹⁰⁹ Lenoble, *Mersenne ou la naissance du Mécanisme*, p. 29.

¹¹⁰ Gassendi, *Opera omnia*, iii, pp. 227-9, 245-6.

¹¹¹ *Ibid.*, pp. 227-8.

¹¹² *Ibid.*, pp. 233-4.

his familiar friends knew well that this was not the case. Those friends themselves used, as he knew, the monochord in singing, in composing, and in writing scores for various musical instruments of the songs composed by them. By the model of his monochord, he had himself, he says, constructed an instrument with metal strings which he used to reproduce the harmonies of any composition that presented difficulties in the consonance of sharp and flat semitones. The instrument had been approved and commended by eminent French and English musicians at the Court of St. James. An exact and inward knowledge of his monochord, therefore, would be enough for him. For, by it, the mysteries of God, of macro- and microcosmical Nature, as well as those of vocal and of instrumental music could be demonstrated.¹¹³

The sources

(1) Marsilio Ficino

Fludd does not mention many of his sources. A few useful hints are, however, found in some of his writings. In *De Templo Musicae*, in a chapter about the effects of music on man, Fludd quotes Marsilio Ficino side by side with Plato and the medieval theoretician of music, Guido d'Arrezzo.¹¹⁴ The quotation is taken from Ficino's Commentary on the *Timaeus*. Ficino's sentence reads as follows:

But musical sound by the movement of the air moves the body: by purified air it excites the aerial spirit which is the bond of body and soul: by emotion it affects the senses and at the same time the soul: by meaning it works on the mind: finally, by the very movement of the subtle air it penetrates strongly: by its contemperation it flows smoothly: by the conformity of its quality it floods us with a wonderful pleasure: by its nature, both spiritual and material, it at once seizes, and claims as its own, man in his entirety.¹¹⁵

¹¹³ Fludd, *Clavis Philosophiae et Alchymiae Fluddanae*, p. 29: 'Attamen in Monochordi mei Symphoniaci inventione, eiusque uso sto ego contentus, quippe mediante quo, super unum cantum Bassum 40 partes, ab invicem sono exacte discrepantes, componere possum, et partem in arte Musica, quamlibet canere. Et quamvis aliqui Musici vulgares, viam meam componendi ignorantes, fronte prima, qua harmoniae leges intuentur, dicant et credant, me in vulgari musices praxi non multum, sed in quadam duntaxat eiusdem speculatione versari; tamen eorum de me sententia, ab Amicis meis familiaribus cognoscitur esse admodum incongrua; quippe quos mediante Monochordi illius usu, nonmodo canere, et componere cantilenas scio; sed etiam cantiones sic compositas, variis Musices instrumentis adaptare. Imo vero Instrumentum quoddam Musicum chordis aeneis ornatum, ipsius mei Monochordi directione conflavi, mediante quo harmoniam, utcunque compositione, propter semitoniorum acu-

torum et mollium in eo concursum difficilem, in illud conferre soleo: itque non sine Musicorum insignium, tam Gallicorum quam Anglicanorum, in curia Regis Angliae versantium, approbatione atque commendatione. Quare mihi sufficet exacta et interna monochordi mei cognitio; quippe mediante qua, mysteria, tam Dei et Naturae cum Macro—tum Microcosmicae, quam cantus et compositionis artificialis, demonstrari queunt.'

¹¹⁴ Fludd, *Utriusque mundi . . . historia*, i, Tract. ii, pp. 166-7.

¹¹⁵ Ficino, *Opera omnia*, Basle 1576, p. 1453 (Comm. in Tim., c.28): 'Concentus autem per aeream naturam in motu positam movet corpus: per purificatum aerem concitat spiritum aereum animae corporisque nodum: per affectum, afficit sensum simul et animum: per significationem, agit in mentem: denique per ipsum subtilis aeris motum, penetrat vehementer: per contemperationem lambit suaviter: per conformem qualitatem mira

This quotation is of special interest as Fludd uses it in his *Tractatus apologeticus* also, though this time without mentioning his source, as the decisive argument in explaining the fantastic assertion of the Rosicrucians that the members of their fraternity can attract pearls, precious stones and princes by means of music.¹¹⁶ The first two statements of the passage taken from Ficino conclude Fludd's first explanation of the power of music to attract pearls and precious stones.¹¹⁷ Then he sets out to explain how and why the mighty princes of this world may be so attracted. His argument, which expressly refers to Plato's *Republic*, is actually the continuation of Ficino's passage into which quotations of Plato and of Guido d'Arezzo from Fludd's *De Templo Musicae* have been inserted.¹¹⁸ D. P. Walker has dealt with the musical theory of Marsilio Ficino of which the passage quoted by Fludd forms an essential part.¹¹⁹ This theory is the background of Fludd's description of methods to attract the solar influence.

According to Ficino the special power of music resides in the similarity between the material medium by which it is transmitted, air, and the human spirit.¹²⁰ Thus Ficino writes: 'By purified air, musical sound excites the aerial spirit which is the bond of body and soul.' Ficino obviously refers here to the influence of music on human beings. Fludd, however, uses the same sentence as an explanation of the magical influence of music on material things, namely precious stones. This alteration of the argument is highly relevant.

Ficino's influence on Fludd's musical theories, apart from the sentence quoted, appears to have been transmitted mainly through the writings of Agrippa of Nettesheim and of Franciscus Georgius Venetus, who, both, depend largely on Ficino.

(2) Agrippa

It is obvious, and has been stated by several authors, that Fludd was in a general way strongly influenced by Agrippa. According to D. P. Walker, Agrippa in his *De Occulta Philosophia* (1533) gives a full exposition of Ficino's astrological magic, including the details of his planetary music. Ficino is very much concerned about the orthodoxy of his astrological practises. Agrippa, however, mixes Ficino's thought with hopelessly unorthodox magic.¹²¹ Thus Ficino is anxious to assert that his astrological songs are not incantations used to summon demons and compel them to produce magical effects.¹²² Walker points out that instead of being conditioned by music, as in Ficino's theory, into a suitably receptive state for planetary influence, the spirit of the operator of Agrippa becomes itself an active instrument which is projected into the enchanted thing, so as to constrain or direct it.¹²³ Whereas Ficino's effects are subjective and psychological, Agrippa's magic aims also at transitive, thaumaturgic effects.¹²⁴

quadam voluptate perfundit: per naturam, tam spiritualem quam materialem, totum simul rapit et sibi vindicat hominem.' I quote the translation of D. P. Walker, *Spiritual and Demonic Magic from Ficino to Campanella*, Studies of the Warburg Institute, xxii, London 1958, p. 9.

¹¹⁶ See above, p. 199.

¹¹⁷ See above, p. 199, note 8.

¹¹⁸ See above, p. 199, note 9.

¹¹⁹ Walker, *op. cit.*, pp. 3-29.

¹²⁰ *Ibid.*, pp. 6ff.

¹²¹ *Ibid.*, p. 91.

¹²² *Ibid.*, pp. 42-43.

¹²³ *Ibid.*, p. 92.

¹²⁴ *Ibid.*, p. 96.

To justify the Rosicrucians' promise to attract men, especially princes, by means of music, Fludd was able to use the Ficinian theory which explicitly refers to music's effects on man, but to explain the further promise—to attract also things, to wit precious stones, by music—Ficino's theory in its strict application would not have been sufficient. A comparison between some passages in Agrippa's *De Occulta Philosophia* and Fludd's argumentation in the *Tractatus apologeticus* shows that Fludd simply adopted Agrippa's theory of a musical magic directed towards material objects, to explain that latter attraction.¹²⁵ Both explain in similar language the influence, which the harmony of the heavens exerts on the enchanted object through the musician, by means of the spirit.

With Ficino begins a practical revival of the classical theory of the miraculous effects of music. In Agrippa's work this theory even becomes a musical magic which aims at effects on material objects. Fludd is obviously influenced by this development when he postulates a new, deeper, and truer theory of music in support of the Rosicrucian claims. The Rosicrucian promises are themselves an expression of that new trend.

Agrippa's influence on Fludd can also be traced in other places. In particular a compilation of the traditional ideas on harmony in the *Monochordum mundi* is literally copied from the *De Occulta Philosophia*.¹²⁶ Furthermore, a passage in which Agrippa compares the Great Chain of Being that constitutes the world to an extended string¹²⁷ may well have inspired Fludd's concept of the monochord of the world or may at least have contributed to its formation.

(3) Francesco Giorgi

With regard to music Fludd never mentions any particular work of Ficino or of Agrippa. It is the more striking that he repeatedly should confess his admiration for a book on the harmony of the world by the Venetian Franciscan Francesco Giorgi.¹²⁸ According to Walker, one finds in Giorgi's *De Harmonia Mundi* something very like the theoretical framework on which

¹²⁵ E.g. Agrippa, *De Occulta Philosophia*, p. 92: 'Eiusmodi itaque carmina apte atque rite ad stellarum normam composita intellectu sensuque plenissima, vehementi affectu opportune pronunciata, tum secundum eorum articulorum numerum et proportionem, atque secundum formam ex articulis resultantem una, atque per imaginationis impetum vim maximam conspirant in incantante, atque subinde traiciunt in rem incantatam ad illam ligandam aut dirigendam, quorsum affectus sermonesque incantantis intenduntur. Instrumentum vero ipsum incantantium est spiritus quidam purissimus harmonicus, calens, spirans, vivens, motum, affectum, significatum secum ferens, suis articulis compositus, praeditus sensu, ratione denique conceptus.' See also *ibid.*, pp. 40f., 43ff.,

155ff.

¹²⁶ *Ibid.*, pp. 158ff.; Fludd, *Monochordum mundi*, p. 307.

¹²⁷ Agrippa, *op. cit.*, p. 44: 'Sic enim inferiora ad superiora invicem connexa sunt, ut influxus ab eorum capite prima causa, tanquam chorda quaedam tensa, usque ad infima procedat: cuius si unum extremum tangatur, tota subito tremat, et tactus eiusmodi usque ad alterum extremum resonet, ac moto uno inferiori, moveatur et superius, cui illud correspondet, sicut nervi in cithara bene concordata.'

¹²⁸ *Francisci Georgii Veneti Minoritae Familiae De Harmonia Mundi Totius Cantica Tria*, Venetiis 1525. Fludd mentions this work in *Veritatis proscenium*, p. 52; *Monochordum mundi*, p. 302; *Sophiae cum moria certamen*, p. 101.

Ficino's spiritual magic rests, but not the magic itself.¹²⁹ Fludd admires the mystical pantheism expressed in the vast musical metaphor of Giorgi's book so much that one may presume he was influenced by this work. There are indeed a considerable number of specific musical analogies which Fludd is likely to have found in *De Harmonia Mundi* and which he subsequently may have integrated into his own speculations. Thus Giorgi describes God's emanation into the world in musical terms similar to those later used by Fludd.¹³⁰ The theory of harmonic emanation or of emanative harmony, as it might be called, ultimately originates from Plato's theory of the harmonic structure of the *anima mundi* as described in the *Timaeus*. The relevant passage in Fludd's *Monochordum mundi* dealing with Plato's theory and its later development by Proclus appears to have been copied almost literally from *De Harmonia Mundi*.¹³¹

Giorgi discusses in detail the particular harmony between the spheres of the angels and that of the planets. Each sphere of the angels corresponds to one of the planets.¹³² Giorgi states that the Sun is related to the sphere of the *Potestates* by the proportion of the octave.¹³³ This observation became, as it were, the corner stone in the edifice of Fludd's elaborate system of the monochord which is indeed mainly characterized by the symbolism of the octave. Giorgi also describes the emanations of God the Father and God the Son as symbolized by the octave in a similar way as Fludd does later.¹³⁴

In *De Harmonia Mundi* Fludd had also read of music being an aid in the ascent of the soul towards God. Besides Plotinus's theory of the return of the soul to God through music, love and philosophy¹³⁵ Giorgi mentions also Plotinus's view on the ascent of the soul by three kinds of virtue, which are represented by the ancient Greek staff of two octaves.¹³⁶ Though there may have been other reasons which induced Fludd to conceive his first version of the monochord in two octaves, nevertheless, this passage in Giorgi is likely to have contributed towards that first version of the monochord.

Giorgi very often calls God the arch-musician, or *summus moderator*, and the world His song. Many times also he calls the world an instrument.¹³⁷ He even uses the expression *monochordum mundi* several times,¹³⁸ but he does not at all feel committed to this simile. It is only one of many metaphors, whereas to Fludd the monochord became the dominant image. The old symbol of God as the arch-musician who plays on His instrument is indeed the

¹²⁹ Walker, *op. cit.*, p. 112; cf. also *ibid.*, pp. 115-16.

¹³⁰ E.g. Giorgi, *op. cit.*, I, iii, 'Quo consonanti numero summus opifex in creata omnia descendat', fols. 38vff.; I, v, xviii, fols. 97rff.; II, i, xi, fols. 198vff.; III, iii, vii, fols. 34vff.

¹³¹ *Ibid.*, I, v, fols. 85vff.; see above, pp. 214-5.

¹³² *Ibid.*, I, iv, fols. 55rff.

¹³³ *Ibid.*, I, iv, x, 'Magna melodia Sol in octo cum potestatibus conveniens quasi diapason reddit', fols. 66vff. Both Giorgi and Fludd knew, of course, the old version of the harmony of the spheres equalling the planets

to a scale comprising one octave; see *ibid.*, I, viii, i, fol. 164v; Fludd, *Monochordum mundi*, p. 307.

¹³⁴ E.g. Giorgi, *op. cit.*, I, Prooemium, fol. 1r; I, viii, viii, fol. 172v; II, Prooemium, fol. 185v. For the symbolism of the octave see also *ibid.*, I, vi, xix, fol. 114r; I, viii, xiii and xv, 178vff.; III, i, xiii, fol. 14v.

¹³⁵ *Ibid.*, I, iv, xii, fols. 69vf.

¹³⁶ *Ibid.*, III, i, xiii, fol. 14v.

¹³⁷ E.g. *ibid.*, I, v, xvi, fol. 96r; I, viii, i, fols. 164vf.; I, viii, xvi, fol. 180v; II, i, v, fol. 193v.

¹³⁸ E.g. *ibid.*, I, v, xvii, fols. 96vf.; I, viii, vii, fol. 171v.

central analogy of Giorgi's book. It is a perfect expression of the view that the Creator, or player of the world-instrument, is one individual, while there are many creatures or, to use the musical analogy, many notes and strings.¹³⁹ In many passages Giorgi also deals with *musica humana*.¹⁴⁰ Fludd's ideas on *musica humana* seem likewise related to Giorgi's work.

The monochordum mundi as a symbol of Fludd's philosophy

Fludd remained under the spell of the *monochordum mundi* in all the numerous writings which followed its first exposition in *De Musica mundana*. In that book he finishes the description of the monochord with this sentence: 'Haec itaque est machinae universalis harmonia naturalis, quam nemo hactenus, quod sciam, ita succincte atque dilucide explicavit.'¹⁴¹ Indeed he was particularly proud of that invention of his. Was it an original invention? It is not difficult to show that the elements of musical analogy which this symbol served to illustrate all have a long and varied tradition which Fludd, as we have seen, probably assimilated from the books of Ficino, Giorgi and Agrippa. The idea of God as the arch-musician and of the world as His instrument, the manifold variations of the harmony of the spheres, the concert engendered between the spheres of the angels and that of the planets, the harmony of the elements, all these musical metaphors were by no means new. There is hardly any detail of musical speculation which cannot be traced back to the medieval theoreticians of music, whose predilection for number symbolism and analogies of any kind is well known. But these are not the essential source of the revival of musical speculation during the Renaissance. Since the age of high scholasticism the more professional medieval theoreticians of music had shown much sceptical resistance to the topics of *musica mundana* and *musica humana*.¹⁴² The old tradition of the music of the world and of man was not revived amongst them, but amongst the Italian Platonists, Ficino, Pico della Mirandola, Giorgi, Leo Hebraeus. This revival has to be understood in the context of the Renaissance history of the hermetic tradition as described by Frances A. Yates. On Fludd she writes: 'At a very late date, after the *Hermetica* have been dated and when the whole Renaissance outlook is on the wane and about to give way before the new trends of the seventeenth century, Fludd completely reconstructs the Renaissance outlook.'¹⁴³ This is particularly true of his ideas on *musica mundana* and *musica humana*.

The only thing distinguishing Fludd's *musica mundana* entirely from the antecedent tradition is his invention of a concept which unites, comprises and systematizes all previous musical analogies, in particular that of the harmony of the spheres, in one vividly descriptive symbol. To Giorgi the monochord had been one of many possible similes. But to Fludd the monochord, as a

¹³⁹ E.g. *ibid.*, I, v, xviii, fol. 98r; I, viii, i, fol. 164r; I, viii, i, fol. 165r.

¹⁴⁰ *Ibid.*, III, fols. 1ff.

¹⁴¹ Fludd, *Utriusque mundi . . . historia*, i, Tract. i, p. 88.

¹⁴² H. Pfrogner, *Musik. Geschichte ihrer Deutung*, Freiburg und München 1954, pp. 126ff.; H. Abert, *Die Musikanschauung des*

Mittelalters und ihre Grundlagen, Halle 1905, pp. 153-4.

¹⁴³ Frances A. Yates, *Giordano Bruno and the Hermetic Tradition*, London 1964, p. 406; see also *ibid.*, pp. 403ff. On Fludd's controversies with Kepler and Mersenne see *ibid.*, pp. 432ff.

concrete instrument, becomes the symbol *par excellence*, or as he puts it: 'exactissimum naturae mundanae symbolum et ipsius veritatis typus'.¹⁴⁴ Fludd's theory of the monochord provides indeed an easily understandable symbol of his entire philosophy of God and the world. God, tuning the string of the world-instrument, represents His immediate action in the world. The vibrating and sounding string is a perfect expression of the Creation extended between its extremes and of all the ascending and descending connexions and influences within it. The scale and its intervals reflect perfectly the hierarchical order of the cosmos. And the string of the monochord, with its two extremes and its centre where the octave insolubly unites with the ground note, is indeed a perfect analogy of Fludd's two interpenetrating pyramids in which the *anima mundi* in the centre unites the opposites. One can easily imagine how deeply Fludd, the alchemist, was moved when, meditating on the mysteries of the monochord, he suddenly discovered the *coniunctio oppositorum* in its centre. No wonder the symbol of the monochord retained its fascination for him all through his life.

In the Christian as well as Platonic *Weltanschauung* of the Middle Ages the world of the senses was considered to be a mere shadow, something non-essential whose only function it was to point and lead to the essential world that is the world of the ideas. The revaluation of the material principle as opposed to the spiritual values of the other world increasingly led to a conflict. Fludd is deeply involved in this struggle.¹⁴⁵ This is shown by his revaluation of the material principle, i.e. by the way he tried to apply the theory of cognition 'superiora cognoscimus ratione ad inferiora habita' in a very concrete, 'scientific' manner, which seems almost to express a preference for the inductive method.¹⁴⁶ It could only lead to further conflict and to ambiguous results. To Fludd the monochord is thus not merely a metaphor. To him the experience of the visible, palpable *monochordum instrumentale* proves the existence of a *monochordum mundi*.¹⁴⁷ Unlike Giorgi, Fludd tries with a strange sort of realism to respect the phenomena of *musica instrumentalis* as facts. On the other hand, as a traditional metaphysician, he can do so only as far as it suits him. The symbol of the *monochordum mundi* thus assumed the ambiguous character which aroused the hostility of men representing the nascent exact sciences.

The issue of this conflict, in which Fludd's opinions were defeated, marks an important step towards the *Entmusikalisierung der Welt* which is immediately connected with the rise of science. E. Cassirer considers Fludd's controversies from that point of view. He decidedly sides with Kepler. The essence of Kepler's scientific method is in his opinion Kepler's respect for the outer

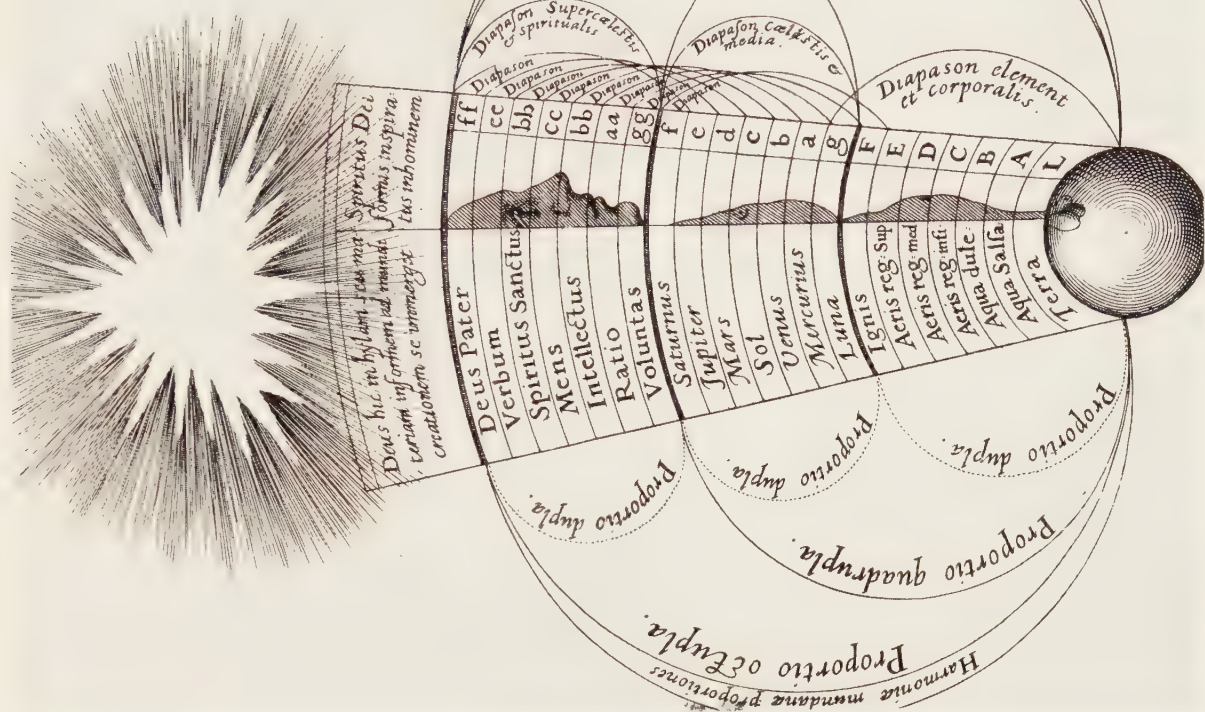
¹⁴⁴ Fludd, *Clavis Philosophiae et Alchymiae Fluddanae*, p. 30.

¹⁴⁵ See A. O. Lovejoy, *The Great Chain of Being*, Cambridge, Mass. 1948, pp. 83-84, 93-94.

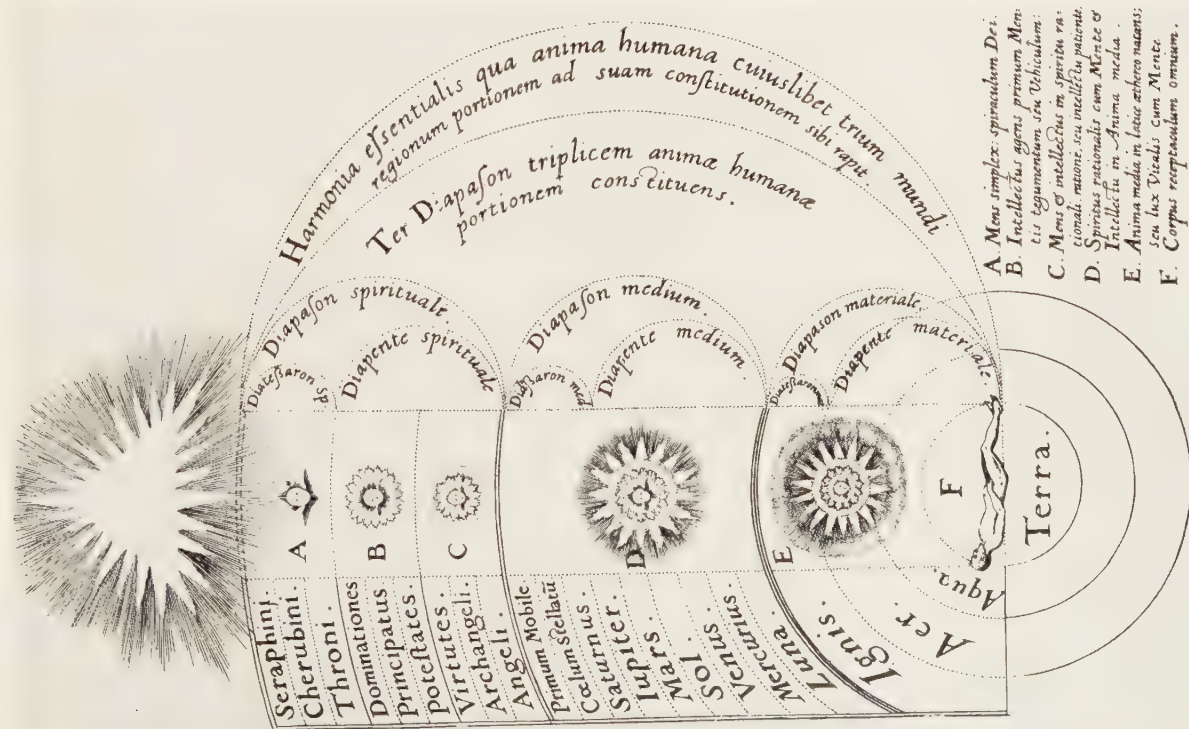
¹⁴⁶ E.g. Fludd, *Veritatis proscenium*, p. 10: 'Quare consonantias sive in coelo sive in terra non meliori via quam chordarum proportionem in magnitudine vel longitudine enucleare potest; Nam superiora cognoscimus ratione

ad inferiora habita.'; *ibid.*, p. 8: 'Nam, ut Diapason, Diapente, et Diatessaron sunt harmonica Musicae artificialis intervalla, sic etiam hoc idem praestant in coelestibus, atque adeo in ipso Archetypo.' See also above, p. 219.

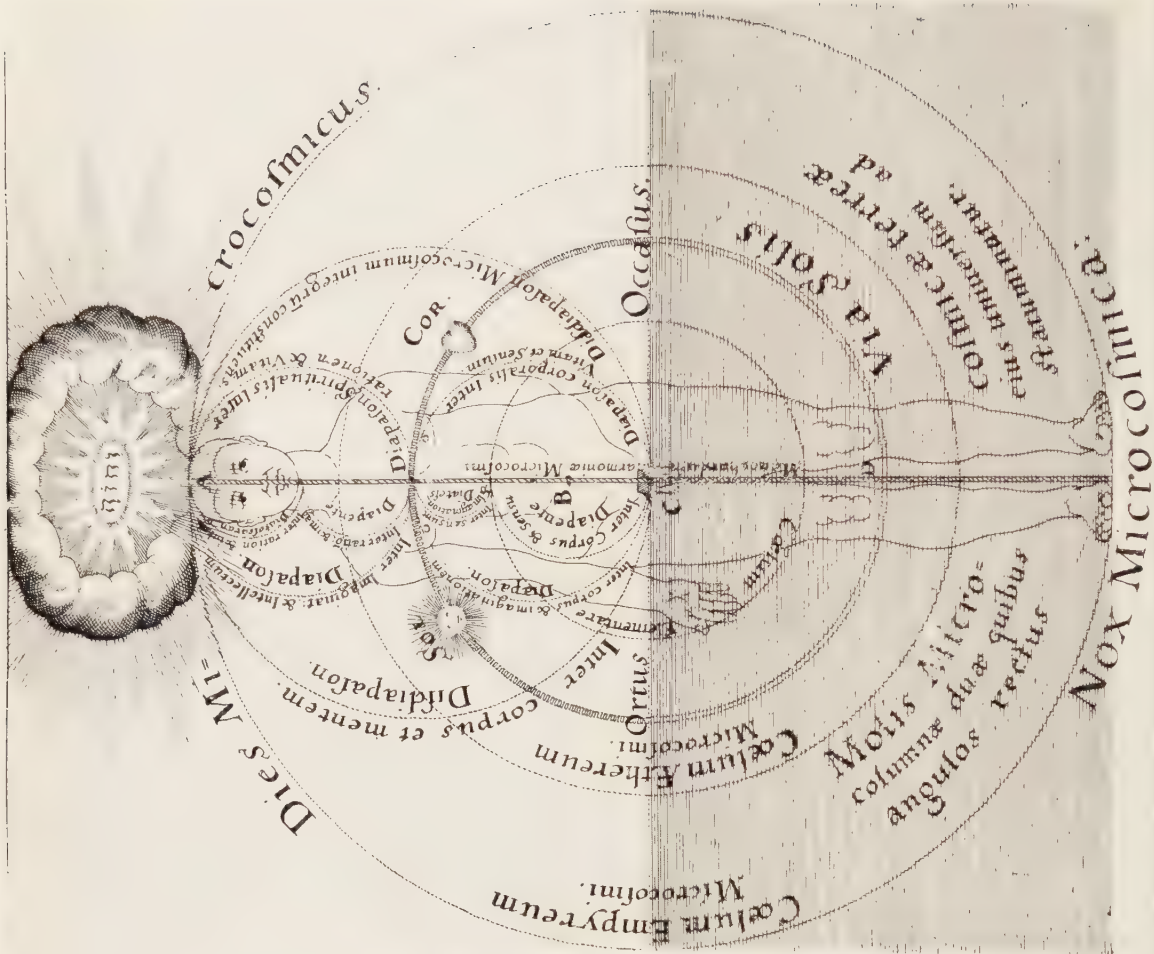
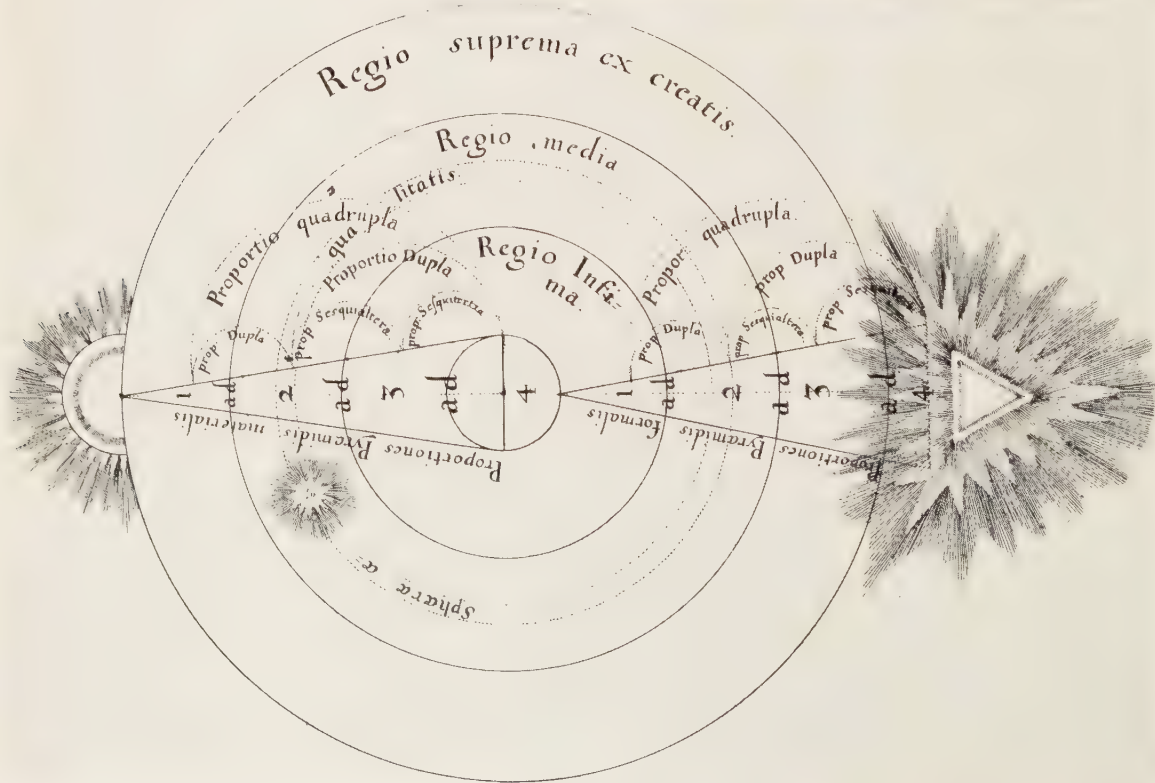
¹⁴⁷ E.g. Fludd mentions the division of the monochord into two octaves as one of several proofs of the central position of the sun; see his *Philosophia Moysaica*, Gouda 1638, fol. 31r.



b—Harmony of the world and of man derived from the septenarius, *Utriusque mundi . . . historia*, ii, Tract I, p. 254 (*p.* 208)

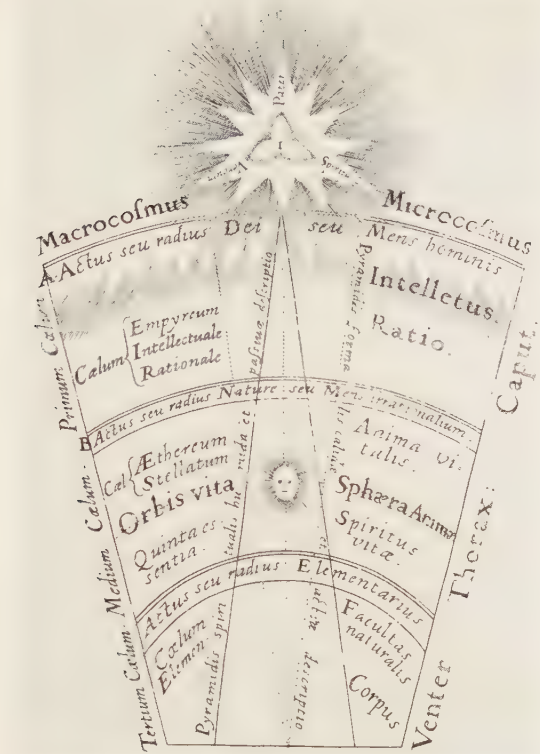


a—The descent of the divine mind into the human body.
l'irisque mundi . . . historia, ii, Tract I, p. 93 (p. 208)

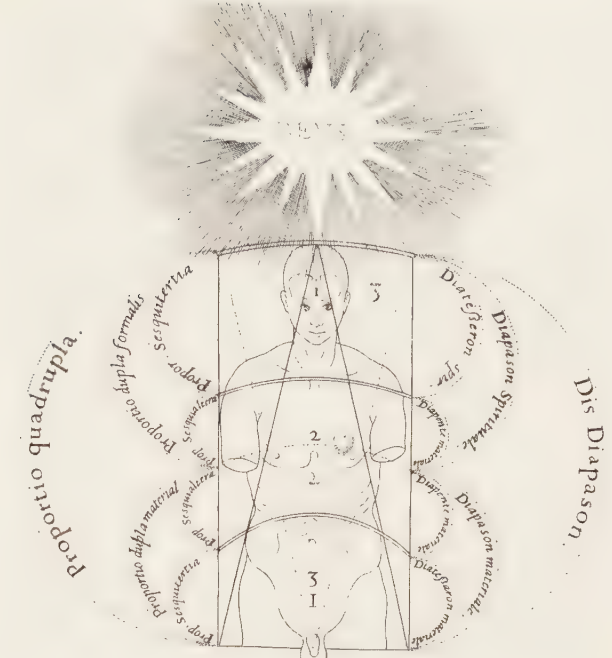


a—Principles of light and darkness represented by the formal and material pyramids. *Utriusque mundi . . . historia*, i, Tract I, p. 84 (*pp.* 200, 202)

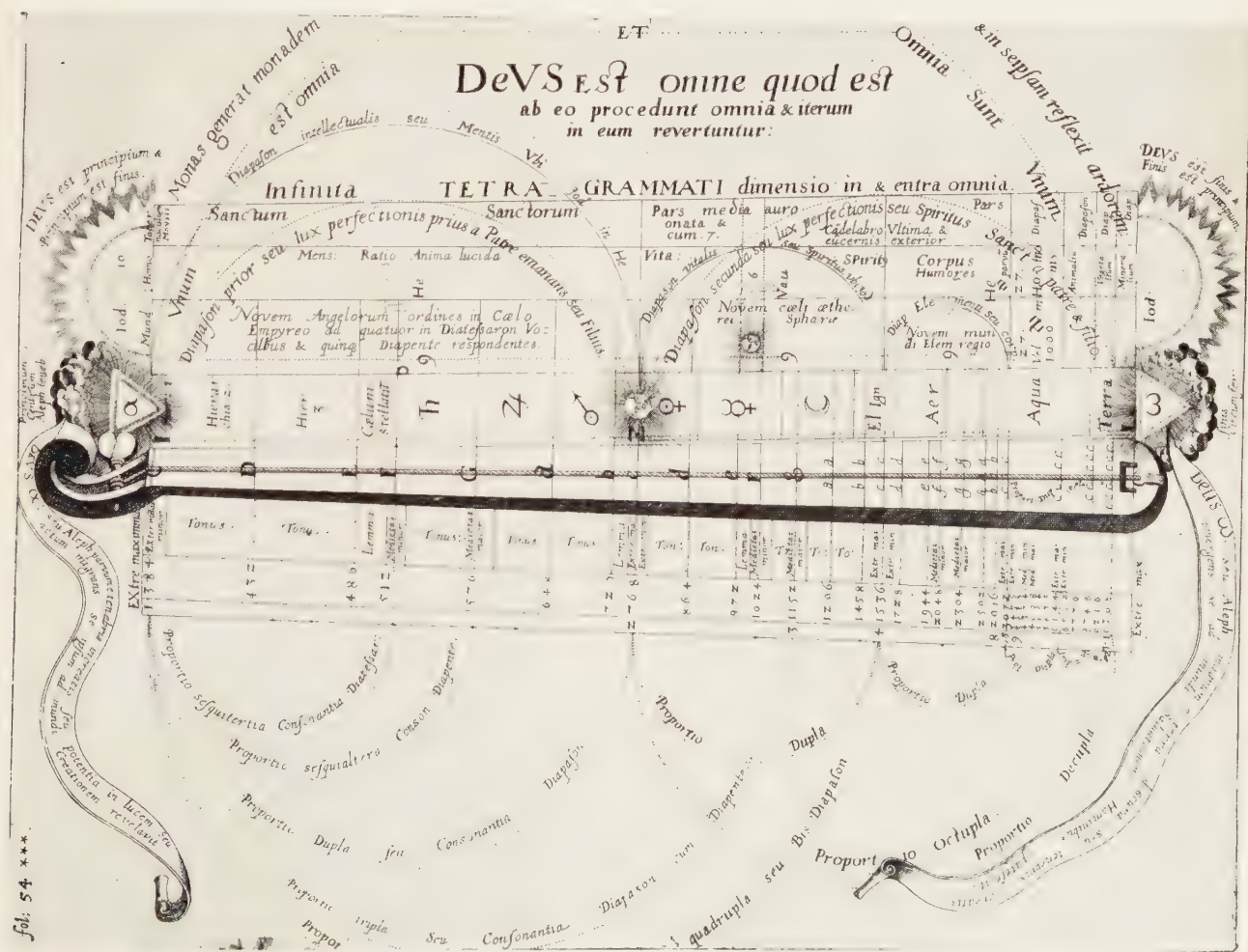
b—*Monochordum harmoniae microcosmi* representing the harmony of mind and body in man. *Utriusque mundi* . . . *historia*, ii, Tract I, p. 275 (p. 209)



a—Correlation of macrocosm and microcosm. *Utriusque mundi . . . historia*, ii, Tract I, p. 82 (p. 209)



b—Conjunction of opposites of mind and body represented by inter-penetrating pyramids and double octave. *Utriusque mundi . . . historia*, ii, Tract I, p. 242 (p. 209)



c—Monochordum mundi correlating series of octaves with Plato's heptachord, Proclus's division, the division of the world, of man, and of the tabernacle of Moses. *Monochordum mundi* (pp. 215f.)

reality. Each step of the deduction is proved by facts previously established by observation. A striking example is Kepler's work on the orbit of Mars. A small difference of eight minutes between his hypothesis and astronomical observation led him to reform the whole system of astronomy. Discussing Kepler's concept of harmony, which he calls Kepler's basic philosophical concept, Cassirer comes to the conclusion that Kepler at first understood by that term the geometrical order in the cosmos which was evidence to him of its animation, but that later he came to consider harmony not as an attribute of things, but as one of the mind. Thus harmony no longer belonged to the existence of a thing, but became a relationship stated by an act of the mind. The nature of the human mind is such, according to Kepler, that anything that the mind understands perfectly is either a quantity or is transmitted to the mind by a quantity. Thence the importance which Kepler attributes to mathematical hypothesis.¹⁴⁸ Contrasting Kepler with Fludd, Cassirer observes that Kepler was fighting against the view that the true essence of Nature may be comprehended without reference to the idealistic concepts of mathematics. Nature, according to Fludd, should be explored directly and in its full reality, not through the abstractions of thought. Thus Fludd considers the cognition of quantities as a knowledge of phantoms which could never reach the essential physical being of things.¹⁴⁹

Considering how Fludd described the difference existing between himself and Kepler, there seems to be little reason for conflict.¹⁵⁰ Kepler deals with the outer, material world, Fludd with the inner, spiritual world. Here the metaphysical realm of inner man, there the physical realm of the outer world. Yet Fludd never meant to confine the significance of his monochord to that of an abstraction or a poetical symbol. On the contrary he intended to prove that it satisfied the demands of mathematics, in so far as it may be applied to the outer material world. He changed the construction of his monochord out of deference to the mathematical and geometrical facts of the division of the string, which he had to some extent neglected in his first version.¹⁵¹ But by making these concessions to Kepler he only got deeper into the tangle. His mystical speculations became even more embroiled with the data of sensual perception. To Fludd the frontier between the spiritual and material world is not identical with the one between the inner world of man and the outer world. On the contrary, the outer material and the inner spiritual world interpenetrate each other like the pyramids of his theory of light and matter. From a modern psychological point of view we might say that Fludd projects an excessive amount of psychic content into the outer material world.

Kepler made a clear distinction between the functions of the objective world and those of the subjective mind. The idea of the harmony of the world, as Cassirer observed, developed only gradually in Kepler's view from ideas on the world soul to the concept of an increasingly functional relationship between the universe and its parts. Yet Kepler never withdrew from the

¹⁴⁸ E. Cassirer, *Das Erkenntnisproblem in der Philosophie und Wissenschaft der neueren Zeit*, 2nd ed., i, Berlin 1911, pp. 328ff.

¹⁴⁹ *Ibid.*, pp. 348ff.

¹⁵⁰ See above, p. 213.

¹⁵¹ See above, pp. 214-5.

notion of the animated world completely. As late as in his *Harmonice mundi* of 1619 he believed that the earth had a soul of its own.¹⁵²

Mersenne went far beyond Kepler in promoting a predominantly materialistic and mechanistic science. He fought not only against Fludd's philosophy, but against any kind of pantheism and panpsychism.¹⁵³ He was, therefore, opposed to any theory of the harmony of the spheres. According to Robert Lenoble,¹⁵⁴ Mersenne first of all wanted to exclude Fludd's animism from science. Music, Mersenne admits, has an effect on the soul, but one must not look in it for any magical effects. Sound is nothing but sonorous movement; this movement excites the organs of the ear and the nerves, and this is the true cause of acoustic phenomena. Trying to exclude magic Mersenne turned towards a mechanistic psychology and science. In his voluminous work *Harmonie universelle*, published between 1633 and 1637, Mersenne denied the existence of any relationship between musical proportions and the orbits of the planets. As Kepler called Fludd's harmonies poetical images, so now Mersenne disdainfully calls Kepler's harmonies symbols and analogies. The *Harmonie universelle* is, according to Lenoble, the first product of the young mechanistic science. In this book Mersenne joyfully digs the grave for the ancient theories of *musica mundana* and of the harmony of the spheres. The world ruled by harmony and disharmony, sympathy and antipathy, in which the vibration of strings and the phenomenon of magnetic attraction had had a metaphysical significance, had died.

It had seemed meaningless to most men of the early seventeenth century to view and explain the world independently of its Creator. Fludd in particular fought against an explanation by means of secondary causes; he wanted to see only the immediate action of God in the world.¹⁵⁵ But history followed another line. The scholars slowly discovered, as Galileo had already done, that it was possible to isolate phenomena from their context in nature, to describe them mathematically, and to leave the explanation there. Nature was beginning to be considered not only independently of God, but also of man.¹⁵⁶ This evolution, as we know, finally led to the triumph, but also to the crisis, of the materialistic and mechanistic philosophy of the nineteenth century.

However, the point of view from which Cassirer and Lenoble judge Fludd's controversies with Kepler and Mersenne elucidates only one aspect thereof. Seen from that angle Fludd, of course, is the epigonic representative of an old-fashioned philosophy, vainly fighting against progress. But another view is possible. The physicist Wolfgang Pauli, writing about Kepler's conflict with Fludd, is very much aware of values which scientists too easily disregard:

Whereas Kepler conceives of the soul almost as a mathematically describable system of resonators, it has always been the symbolical image that has tried to express, in addition, the immeasurable side of experience which also includes the imponderables of the emotions and emotional

¹⁵² Caspar, *Johannes Kepler*, pp. 330-1.

¹⁵³ See above, p. 216 and Yates, *op. cit.*, pp.

432-40.

¹⁵⁴ *Op. cit.*, pp. 367ff.

¹⁵⁵ See above, p. 214, note 82.

¹⁵⁶ See W. Heisenberg, *Das Naturbild der heutigen Physik*, (Rowohlts deutsche Enzyklopaedie, viii), pp. 7-8.

evaluations. Even though at the cost of consciousness of the quantitative side of nature and its laws, Fludd's 'hieroglyphic' figures do try to preserve a *unity* of the inner experience of the 'observer' (as we should say today) and the external processes of nature, and thus a *wholeness* in its contemplation—a wholeness formerly contained in the idea of the analogy between microcosm and macrocosm but apparently already lacking in Kepler and lost in the world view of classical natural science.¹⁵⁷

Apparently, Pauli alludes here with some regret to the relative loss humanity sustained when its scholars, in their dealings with Nature, abandoned the language of alchemy and music and replaced it by the less engaging expressions of quantitative research.

¹⁵⁷ W. Pauli, 'The Influence of Archetypal Ideas on the Scientific Theories of Kepler', in C. G. Jung and W. Pauli, *The Interpretation of Nature and the Psyche*, English trans., London 1955, p. 207.

CURRICULUM VITAE

Born September 16th, 1931, in Zürich. Attended schools in Aarau and graduated 1951 with 'Maturität Typus B'. Diploma as a cellist after studies in Zürich and Paris. Attended the C. G. Jung-Institute, Zürich, from 1958 and graduated in 1965. Studied at the University of Zürich from 1958 'Musikwissenschaft' (Prof. Dr. K. v. Fischer) as major and History of Religions (Prof. Dr. V. Maag) and 'Volkskunde' (Prof. Dr. R. Weiss) as minor subjects. Promotion 1963.

I wish to express my particular thanks to Prof. K. v. Fischer, Ph.D., for his generous assistance and for giving me much welcome advice.

